UTAH'S RARE PLANTS REVISITED

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Abstract.— Presented is a current evaluation of the status and distribution of Utah's rare plant species, including those officially listed as endangered or threatened, those under review for listing, those recommended by the Utah Native Plant Society, and those which recently have been removed from consideration. Taxa are discussed alphabetically. Information on status, distribution, habitat, elevation, and specimens deposited at Brigham Young University are included in the discussion of each species. Maps showing the state distribution of each listed or candidate plant are also provided. New combinations include *Dalea flavescens* (Wats.) Welsh var. *epica* (Welsh) Welsh & Chatterley and *Schoenerambe suffrutescens* (Rollins) Welsh & Chatterley.

As a result of the Endangered Species Act of 1973, a list of proposed endangered and threatened plant species was compiled under the direction of the Smithsonian Institution. The Smithsonian list was published in 1975 (Greenwalt and Gehringer 1975), and since that time information concerning rare plants in the United States has continued to accumulate. Available information concerning the rare plants of Utah has steadily increased. A few months following publication of the Smithsonian list a critical examination of each rare taxon found in Utah was also published (Welsh, Atwood, and Reveal 1975). Data from this more detailed and concentrated survey of rare Utah flora was incorporated into the proposed federal rulemaking published in 1976 by the director of the Fish and Wildlife Service (Greenwalt 1976). Since then two additional publications have attempted to evaluate and summarize the status of rare plants in Utah according to the most up-to-date information. A reevaluation of Utah's endangered and threatened plants was published in the *Great Basin Naturalist* (Welsh 1978), and an illustrated manual was published by the U.S. Fish and Wildlife Service (Welsh and Thorne 1979). Since that time eight species occurring in Utah have been determined as threatened or endangered, and several others are in the final stages of the listing process.

In December 1980 a review of plant taxa considered for listing as endangered or threatened species was published in the Federal Register by the acting director of the U.S. Fish and Wildlife Service (Lamberton 1980). This publication placed species in categories indicating their readiness for listing. Category 1 plants were those species for which the Service had sufficient information to support the appropriateness of their being listed as threatened or endangered. Category 2 plants were those species that required further biological research and field study to determine the appropriateness of their being listed. Category 3 plants were those species no longer being considered for listing as endangered or threatened. There were three subheadings in this category. 3A plants were taxa considered probably extinct. 3B plants were those with unsure taxonomic status. 3C plants were those taxa that had proven to be more widespread than originally believed, or that were no longer subject to any threats. In November 1983 an updated list with current status evaluations was published in the Federal Register by the assistant secretary of Fish and Wildlife and Parks (Arnett 1983).

It is not the purpose of this paper to duplicate the information previously presented in the literature. However, five years have passed since the last publication summarizing or evaluating the status of Utah's rare plants, including those which by statute are considered threatened or endangered. Since that time new taxa have been described from the state, and their status has not been considered. Several major rare plant inventories have also been conducted within the state,

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TABLE 1. County distribution of Utah's rare plants.

Name	Distribution
Arctomecon humilis (L)	Washington
Asclepias cutleri (2)	Grand, San Juan
Asclepias welshii (1)	Kane
Astragalus ampullarius (2)	Kane, Washington
Astragalus barnebyi (2)	Garfield, Wayne
Astragalus cronquistii (1)	San Juan
Astragalus deserticus (2)	Sanpete (?), Utah
Astragalus equisolensis (2)	Uintah
Astragalus hamiltonii (1)	Uintah
Astragalus harrisonii (2)	Wayne
Astragalus iselyi (1)	Grand, San Juan
Astragalus lentiginosus var. *ursinus* (2°)	Iron
Astragalus montii (1)	Sanpete, Sevier
Astragalus perianus (L)	Garfield, Iron, Kane, Piute
Astragalus sabulosus (2)	Grand
Astragalus striatiflorus (2)	Kane, Washington
Astragalus subcinereus var. *basalticus* (2)	Emery, Sevier
Astragalus uncialis (2)	Millard
Castilleja aquariensis (2)	Garfield, Wayne
Castilleja revealii (1)	Garfield, Iron
Cirsium virginensis (2)	Washington
Coryphantha missouriensis var. *marstonii* (2)	Garfield, Kane
Cryptantha barnebyi (1)	Uintah
Cryptantha compacta (1)	Beaver, Millard, Tooele
Cryptantha creutzfeldtii (2)	Carbon, Emery
Cryptantha elata (2)	Grand
Cryptantha jonesiana (2)	Emery
Cryptantha ochroleuca (1)	Garfield
Cuscuta warneri (2°)	Millard
Cycladenia humilis var. *jonesii* (1)	Emery, Garfield, Grand
Cymopterus beckii (2)	Wayne
Cymopterus higginsii (1)	Kane
Cymopterus minimus (2)	Garfield, Iron, Kane
Dalea flavescens var. *epica* (2)	Garfield, San Juan
Draba maguirei var. *burkei* (2)	Box Elder, Weber
Echinocereus engelmannii var. *purpureus* (L)	Washington
Echinocereus triglochidiatus var. *inermis* (L)	San Juan
Epilobium nevadense (2)	Millard, Washington
Erigeron cronquistii (1)	Cache
Erigeron kachinensis (2)	San Juan
Erigeron maguirei var. *maguirei* (1)	Emery
Erigeron maguirei var. *harrisonii* (2)	Wayne
Erigeron mancus (2)	Grand, San Juan
Erigeron proselyticus (1)	Iron, Kane
Erigeron sionis (2)	Kane, Washington
Erigeron untermannii (2)	Duchesne
Eriogonum ammophilum (1)	Millard
Eriogonum arctioides (1)	Garfield
Eriogonum cronquistii (2)	Garfield
Eriogonum humivagans (2)	San Juan
Eriogonum lancifolium (2)	Carbon, Emery
Eriogonum loganum (2)	Cache, Morgan
Eriogonum natum (1)	Millard
Eriogonum smithii (1)	Emery
Eriogonum soredium (2)	Beaver
Festuca dasyclada (2)	Emery, Sanpete, Wasatch
Gaillardia flava (2)	Emery, Grand
Gilia caespitosa (2)	Wayne
Glaucocarpon suffrutescens (1)	Uintah
Hedysarum occidentale var. *canone* (1)	Carbon, Emery
Heterotheca jonesii (2)	Garfield, Kane, Washington
Hymenoxys depressa (2)	Duchesne, Emery, Sevier
Hymenoxys helenioides (2)	Emery, Garfield, Sanpete, Sevier
Lepidium barnebyanum (1)	Duchesne
Lepidium montanum var. *neeseae* (2)	Garfield
Lepidium montanum var. *stellae* (2)	Kane
Lepidium ostleri (1)	Beaver
Lesquerella tumulosa (1)	Kane
Lomatium latilobum (2)	Grand, San Juan
Mentzelia argillosa (2)	Sanpete, Sevier
Najas caespitosus (2°)	Sevier
Oenothera acutissima (2)	Daggett, Uintah
Pediocactus despainii (2)	Emery
Pediocactus winkleri (2)	Wayne
Penstemon atwoodii (2)	Garfield, Kane
Penstemon bracteatus (1)	Garfield
Penstemon compactus (2)	Cache
Penstemon concinnus (2)	Beaver, Iron, Millard
Penstemon goodrichii (2)	Duchesne, Uintah
Penstemon grahamii (1)	Uintah
Penstemon leptanthus (2)	Sanpete
Penstemon nanus (2)	Beaver, Millard
Penstemon parvus (2)	Garfield, Piute
Penstemon scariosus var. *albifluvis* (1)	Uintah
Penstemon tidestromii (2)	Juab, Sanpete
Penstemon wardii (2)	Sanpete, Sevier
Phacelia argillacea (L)	Utah
Phacelia indecora (2)	Emery, San Juan, Wayne
Primula maguirei (1)	Cache
Psoralea epipsila (2)	Kane
Psoralea pariensis (1)	Garfield, Kane
Psorothamnus polyadenius var. *jonesii* (2)	Emery
Ranunculus acriformis var. *aestivalis* (2)	Garfield
Sclerocactus glaucus (L)	Duchesne, Uintah, San Juan
Sclerocactus pubispinus (2)	Beaver, Juab, Millard, Sevier, Tooele
Sclerocactus wrightiae (L)	Emery, Kane, Wayne
Selaginella utahensis (2)	Washington

Table 1 continued.

Name	Distribution
Senecio dimorphophyllus var. *intermedius* (2)	San Juan, Sanpete
Silene petersonii var. *minor* (1)	Garfield, Iron
Silene petersonii var. *petersonii* (2)	Garfield, Sanpete
Sphaeralcea caespitosa (2)	Beaver, Millard
Sphaeralcea psoraloides (2)	Emery, Wayne
Sphaeromeria capitata (2)	Garfield
Sphaeromeria ruthiae (2)	Washington
Swertia gypsicola (2)	Millard
Thelypodiopsis argillacea (1)	Uintah
Thelypodiopsis barnebyi (2)	Emery
Townsendia aprica (1)	Emery, Sevier
Trifolium andersonii var. *friscanum* (1)	Beaver, Millard
Xylorhiza cronquistii (2)	Kane

adding significantly to the knowledge of rare plant distribution of the region. Surveys funded by agencies of the federal government, including studies of M-X related sites in western Utah, oil-shale lands in the Uinta Basin, and inventories in portions of southeastern Utah have added important data. The concerted effort of active individual botanists during the past few years has also been productive. Because of these activities, additional information has been generated that makes desirable further discussion of Utah's potentially threatened or endangered plant species.

No previous discussion has included a summary and update of information concerning those species that have been officially listed from the state. This information is included below. Following the discussion of officially listed taxa, rare plant species being considered for listing are discussed. Taxa that have been considered for listing but were downgraded to category 3 species in the November 1983 Federal Register are discussed at the end of the article.

UTAH'S FEDERALLY LISTED SPECIES

Eight taxa known from Utah are currently included on the federal list of endangered and threatened species. Five of the plants are species of cactus. The other three include a milkvetch, a poppy, and a phacelia. These taxa are some of the state's most rare and endangered plants.

Under the provisions of the Endangered Species Act, protection is provided to any species threatened by (1) the destruction or modification of its habitat, (2) overutilization for commercial or scientific purposes, (3) disease or predation, (4) the inadequacy of existing regulatory mechanisms, and (5) other man-made factors. Two listing classifications are provided. The term *endangered* is given to a species in danger of extinction through all or a significant portion of its range. The term *threatened* is applied to species that are likely to become endangered in the foreseeable future.

To ensure the proper protection of threatened and endangered species, the Endangered Species Act regulates interstate and foreign commerce of protected plants and, perhaps most importantly, provided financial assistance for scientific studies, managerial activities, and land acquisition to ensure the continued existence of rare taxa.

A brief discussion of each officially listed species is given below, including status (threatened or endangered), a discussion of rarity, known distribution, habitat, and elevation. Collections deposited at BRY are listed, including the date of collection, county, township and range, collectors, and collection number. Distribution maps are also included. Figure 1 shows the distribution of officially listed species in the state of Utah by township and range.

Arctomecon humilis Cov.

Map 1

Family: Papaveraceae.
Federal status: endangered.

The dwarf bear poppy is known only from Washington County, Utah. It is perhaps the most endangered of the plants in Utah. Populations occur near St. George in areas where the soil has a high gypsum content. Their proximity to a rapidly expanding city and their existence on lands frequented by off-road vehicles places the continued existence of the species in danger. Recently the U.S. Fish and Wildlife Service has developed a recovery plan for this taxon, and the state of Utah has initiated steps to protect the species. Vegetative types associated with the species are salt desert or warm desert shrub communities. Substrate is clay gypsiferous soils of the Moenkopi Formation. Elevation ranges from 2500 to 2880 feet.

Washington County: T43S, R17W, JW Harrison 32-124 (1932); T42S, R15W, WP Cottam 7238 (1937); T43S, R15W, A Terril (1961); T43S, R16W, ND Atwood 1704 (1969); T43S, R15W, SL Welsh & ND Atwood 9695 (1970); T43S, R15W, LC Higgins 4210 (1971); T43S, R16W, D Atwood 6590 (1976); T43S, R16W, D Atwood (1976); T43S, R16W, RK Gierisch 4266 (1978); T43S, R16W, SL Welsh 20388 (1981); T43S, R16W, LC Higgins & BT Welsh 13415 (1983); T43S, R16W, LC Higgins & BT Welsh 13423 (1983); T43S, R15W, E Neese 12896 (1983).

Astragalus perianus Barneby

Map 2

Family: Fabaceae.
Federal status: threatened.

The Rydberg milkvetch was known originally from Piute and Garfield counties. In 1981 Barneby annotated several collections previously designated as *A. serpens* to *A. perianus*, extending the known range of this rare taxon into Iron and Kane counties. The Piute County collections are all from the Tushar Mountains, near Bullion Creek. All the Garfield County collections are from near Mt. Dutton. To ensure protection of the species, the U.S. Forest Service developed a management plan that was signed in 1983. Two monitoring stations were established, one near the type locality and one on Mt. Brigham. A recovery plan is currently in the review stage. This high elevation milkvetch occurs in alpine, aspen, grass-sedge meadow, and mixed conifer woodland community types. Substrates include tertiary igneous gravels, volcanic ash, rocky loam, and clay soils. Elevational range extends from 10,000 to 11,000 feet.

Garfield County: T32S, R3W R & D Foster 5408 (1977); T32S, R3W, JR Murdock s.n. (1975); T32S, R3W, SL Welsh & JR Murdock 12849, 12849b (1975); T32S, R3W, D Atwood 8195 (1981); T32S, R3W, SL Welsh & K Taylor 14454 (1976); T32S, R3W, R & D Foster (1977). Iron County: T34S, R7W, R & D Foster 4230 (1977); T35S, R7W, R Foster 5586 (1977); T34S, R7W, R & D Foster 4737 (1977). Kane County: T37S, R2W, R & D Foster 4440 (1977). Piute County: T28S, R5W, SL Welsh & J Henroid 18142 (1978); T28S, R4W, D Atwood 7397 (1979); T27S, R2W, L C Higgins 1155A (1967); T28S, R5W, D Atwood 8045 (1981).

Echinocereus engelmannii (Parry) Rumpler var. *purpureus* L. Benson

Map 3

Family: Cactaceae.
Federal status: endangered.

The purple-spined hedgehog cactus is known from St. George, north to Veyo and east to Leeds and Hurricane in Washington County. Habitat for this variety of the hedgehog cactus includes the blackbrush-ephedra and Mohave Desert vegetation types, where it grows in sandy pockets of the Navajo Sandstone Formation and other substrates. Elevation ranges from 3100 to 3700 feet.

Washington County: T42S, R15W, L Benson 13637, POM (1949); T42S, R16W, D Ross 6 (1982); T42S, R15W, D Ross 4 (1982); T41S, R13W, D Ross 2 (1982); T41S, R13W, D Ross 3 (1982); T40S, R16W, D Ross 1 (1982); T42S, R15W, J Anderson (1982); T42S, R15W, J Anderson (1982); T42S, R15W, D Atwood 5096 (1973); T42S, R16W, SL Welsh 20389 (1981); T41S, R13W, D Ross 5 (1982).

Echinocereus triglochidiatus Engelm. var. *inermis* (K. Schum) Rowl.

Map 4

Family: Cactaceae.
Federal status: endangered.

The spineless hedgehog cactus occurs in San Juan County, Utah, but is also known from Colorado. Two collections of the species are deposited at BRY and come from the La Sal Mountains. The cactus grows in pinyon-juniper–galleta grass or pinyon-juniper–*Yucca baccata*-blacksage community types. This plant prefers sites with very shallow, rocky soil, usually less than six inches deep. It is commonly found along edges of sandstone outcrops or exposed sandstone slabs belonging to the Brushy Basin and Salt Wash members of the Morrison Formation. A management plan has been developed for this species, and a monitoring station was established in the La Sals in 1980. Elevation ranges from 5000 to 8000 feet.

San Juan County: T27S, R24E, SL Welsh, D Atwood 9933 (1970); T27S, R23E, RM Thompson s.n. (1979).

Pediocactus sileri (Engelm.) L. Benson

Map 5

Family: Cactaceae.
Federal status: endangered.

The Siler pincushion cactus is known from near Fredonia in Mohave and Coconino counties, Arizona, and from southeast of St. George in Washington County, Utah. Habitat for the species includes an Atriplex-ephedra-Cowania vegetative community. It grows in clay soils of the Moenkopi Formation.

Washington County: T43S, R15W, SL Welsh and AH Barnum 12712 (1975); T43S, R11W, E Neese 12879 (1983); T43S, R14W, E Neese 12902 (1983).

Phacelia argillacea Atwood
Map 6

Family: Hydrophyllaceae.
Federal status: endangered.

The clay phacelia is known only from Utah County. Originally collected by Marcus E. Jones in 1883 and 1894, this phacelia was not recognized at specific level until 1975. There are no known collections of the plant for the period from 1894 until 1971, when Duane Atwood rediscovered the population in Spanish Fork Canyon. Two populations of this rare plant exist. The type locality occurs on the east side of Highway 6. Recently an additional and larger population was discovered on the west side of the highway. Habitat for the clay phacelia is an *Agropyron* community on shale outcrops of the Green River Formation. Elevation is approximately 6600 feet.

Utah County: T11S, R8E, ME Jones s.n. (1883); T6S, R12W, ME Jones 5591 (1894); T10S, R6E, ND Atwood et al. 3091, Holotype (1971); T10S, R6E, SL Welsh & K Taylor 15277, 15047, 15047A (1977); T10S, R6E, F Smith, E Neese & J Trent 1722 (1982).

Sclerocactus glaucus (K. Schum) L. Benson
Map 7

Family: Cactaceae.
Federal status: threatened.

The Uinta Basin hookless cactus occurs in Colorado as well as Duchesne, Uintah, and San Juan (?) counties in Utah. Habitat includes salt desert shrub and shrub-grass communities on terrace gravels and commonly on clays of the Uinta Formation. Elevation extends from 4700 to 5800 feet. Classification of cacti has long been difficult, and this genus is no exception. The straight-spined *Sclerocactus glaucus* has been known in Utah primarily from the Uinta Basin. However, a straight-spined plant was recently collected in San Juan County, east of Hite. Current study of Utah's collections (Welsh, in press) questions the appropriateness of species designation for this straight-spined phase of *Sclerocactus*. Possibly straight spines in this genus are not more important taxonomically than spineless phases of other plants scattered through spined taxa elsewhere in the Cactaceae. It may be that *Sclerocactus glaucus*, in Utah, should be placed within a more broadly based concept of another species.

Duchesne County: T4S, R1W, UBM, SL Welsh & E Neese 18303 (1979); T11S, R17E, E Neese & S White 8654 (1980); T4S, R1W UBM, S Welsh & E Neese 18306 (1979); T3S, R6W, UBM, SL Welsh 18512A (1979). Uintah County: T7S, R20E, E Neese & BT Welsh 7277 (1979); T11S, R18E, E Neese 4487 (1978); T9S, R19E R Foster 7588 (1979); T8S, R20E, Welsh & Neese 18340 (1979); T9S, R20E, E & J Neese 7584 (1979); T8S, R20E, SL Welsh & E Neese 18324 (1979); T11S, R19E, E Neese & S White 8652 (1980); T11S, R18E E Neese & S White 8655 (1980); T7S, R20E, Neese & B Welsh 7279 (1979); T11S, R17E, E Neese & S White 8653 (1980); T4S, R1W UBM, 7279 (1979); T11S, R17E, E Neese & S White 8653 (1980); T4S, R1W UBM, Welsh & Neese 18307, 18308, 18309, 18309A (1979). San Juan County: T35S, R15E, SL, BT, ML Welsh 22187 (1983).

Sclerocactus wrightiae L. Benson
Map 8

Family: Cactaceae.
Federal status: endangered.

The Wright fishhook cactus occurs in Emery and Wayne counties. The greatest number of collections come from Wayne County, where populations of the plant occur near Factory Butte and North Caineville Mesa. Habitat includes salt desert shrub, shrub-grass, and juniper communities on Mancos Shale, Dakota, Morrison, Summerville, and Entrada formations. Elevational range extends from 4800 to 6100 feet.

Emery County: T24S, R6E, Neese & White 7315 (1979); T24S, R6E, E Neese & K Mutz 11428 (1982); T26S, R11E, Neese & Thorne 7177, 7177A (1979); T23S, R6E, JG Harris 657 (1980). Wayne County: T27S, R9E, KD Heil (1978); T27S, R9E, KD Heil (1978); T29S, R11E, KD Heil (1976); T30S, R7E, D Atwood & S Goodrich 8632 (1982); T27S, R9E, KD Heil (1978); T27S, R9E, S, E, & M Welsh 16704, 16723 (1978); T27S, R9E, S Welsh, K Taylor, F Peabody 13094 (1976).

Plants Currently under Review

In December 1981 the Utah Native Plant Society appointed a committee to review information accumulated during the past collecting season. From that review recommendations were made concerning the status of Utah's rare plant species. Taxa were placed in categories based on priorities for listing. Those species considered most threatened were placed in the highest category, and those to which the threat was not as critical were placed in lower categories. In each year since 1981, the Utah Native Plant Society has

TABLE 2. Utah's rare plants by county.

BEAVER
Cryptantha compacta
Eriogonum soredium
Lepidium ostleri
Penstemon concinnus
Sclerocactus pubispinus
Sphaeralcea caespitosa
Trifolium andersonii var. *friscanum*

BOX ELDER
Draba maguirei var. *burkei*

CACHE
Erigeron cronquistii
Eriogonum loganum
Penstemon compactus
Primula maguirei

CARBON
Eriogonum lancifolium
Cryptantha creutzfeldtii
Hedysarum occidentale var. *canone*

DAGGETT
Oenothera acutissima

DUCHESNE
Erigeron untermannii
Hymenoxys depressa
Lepidium barnebyanum
Penstemon goodrichii
Schlerocactus glaucus

EMERY
Astragalus subcinereus var. *basalticus*
Cryptantha creutzfeldtii
Cryptantha jonesiana
Cycladenia humilis var. *jonesii*
Erigeron maguirei var. *maguirei*
Eriogonum lancifolium
Eriogonum smithii
Festuca dasyclada
Gaillardia flava
Hedysarum occidentale var. *canone*
Hymenoxys depressa
Hymenoxys helenioides
Pediocactus despainii
Phacelia indecora
Psorothamnus polyadenius var. *jonesii*
Sclerocactus wrightiae
Sphaeralcea psoraloides
Thelypodiopsis barnebyi
Townsendia aprica

GARFIELD
Astragalus barnebyi
Astragalus perianus
Castilleja aquariensis
Castilleja revealii
Coryphantha missouriensis var. *marstonii*
Cryptantha ochroleuca
Cycladenia humilis var. *jonesii*

Table 2 continued.

Cymopterus minimus
Dalea flavescens var. *epica*
Eriogonum aretioides
Eriogonum cronquistii
Heterotheca jonesii
Hymenoxys helenioides
Lepidium montanum var. *neeseae*
Penstemon atwoodii
Penstemon bracteatus
Penstemon parvus
Psoralea pariensis
Ranunculus acriformis var. *aestivalis*
Silene petersonii var. *minor*
Silene petersonii var. *petersonii*
Sphaeromeria capitata

GRAND
Asclepias cutleri
Astragalus iselyi
Astragalus sabulosus
Cryptantha elata
Cycladenia humilis var. *jonesii*
Erigeron mancus
Gaillardia flava
Lomatium latilobum

IRON
Astragalus lentiginosus var. *ursinus*
Astragalus perianus
Castilleja revealii
Cymopterus minimus
Erigeron proselyticus
Penstemon concinnus
Silene petersonii var. *minor*

JUAB
Penstemon tidestromii
Sclerocactus pubispinus

KANE
Asclepias welshii
Astragalus ampullarius
Astragalus perianus
Astragalus striatiflorus
Coryphantha missouriensis var. *marstonii*
Cymopterus higginsii
Cymopterus minimus
Erigeron proselyticus
Erigeron sionis
Heterotheca jonesii
Lepidium montanum var. *stellae*
Lesquerella tumulosa
Penstemon atwoodii
Psoralea epipsila
Psoralea pariensis
Xylorhiza cronquistii

MILLARD
Astragalus uncialis
Cryptantha compacta
Cuscuta warneri
Epilobium nevadense

Table 2 continued.

Erigonum ammophilum
Eriogonum natum
Penstemon concinnus
Sclerocactus pubispinus
Sphaeralcea caespitosa
Swertia gypsicola
Trifolium andersonii var. *friscanum*

Morgan
Eriogonum loganum

Piute
Astragalus perianus
Penstemon parvus

Rich
Eriogonum loganum

San Juan
Asclepias cutleri
Astragalus cronquistii
Astragalus iselyi
Dalea flavescens var. *epica*
Echinocereus triglochidiatus var. *inermis*
Erigeron kachinensis
Erigeron mancus
Eriogonum humivagans
Lomatium latilobum
Phacelia indecora
Sclerocactus glaucus
Senecio dimorphophyllus var. *intermedius*

Sanpete
Astragalus desereticus
Astragalus montii
Festuca dasyclada
Hymenoxys helenioides
Mentzelia argillosa
Penstemon leptanthus
Penstemon tidestromii
Penstemon wardii
Senecio dimorphophyllus var. *intermedius*
Silene petersonii var. *petersonii*

Sevier
Astragalus montii
Astragalus subcinereus var. *basalticus*
Hymenoxys depressa
Hymenoxys helenioides
Mentzelia argillosa
Najas caespitosus
Penstemon wardii
Sclerocactus pubispinus
Townsendia aprica

Tooele
Cryptantha compacta
Sclerocactus pubispinus

Uintah
Astragalus equisolensis
Astragalus hamiltonii

Table 2 continued.

Cryptantha barnebyi
Glaucocarpon suffrutescens
Oenothera acutissima
Penstemon goodrichii
Penstemon grahamii
Penstemon scariosus var. *albifluvis*
Sclerocactus glaucus
Thelypodiopsis argillacea

Utah
Astragalus desereticus
Phacelia argillacea

Wasatch
Festuca dasyclada

Washington
Arctomecon humilis
Astragalus striatiflorus
Cirsium virginensis
Echinocereus engelmannii var. *purpureus*
Epilobium nevadense
Erigeron sionis
Heterotheca jonesii
Selaginella utahensis
Sphaeromeria ruthiae

Wayne
Astragalus barnebyi
Astragalus harrisonii
Castilleja aquariensis
Cymopterus beckii
Erigeron maguirei var. *harrisonii*
Gilia caespitosa
Pediocactus winkleri
Phacelia indecora
Sclerocactus wrightiae
Sphaeralcea psoraloides

reviewed and reevaluated the status of rare plants in Utah according to new information accumulated during the previous field season. In 1983 and 1984 the society adopted the same terminology used by the U.S. Fish and Wildlife Service in the Federal Register.

The discussion of each taxon in this paper includes the recommendations made by the Utah Native Plant Society where they differ from the federal recommendations. The November 1983 Federal Register is used for current federal categories, and recommendations from the 1984 meeting of the Utah Native Plant Society are utilized. Current information based on the most recent collection data for each taxon is presented. Taxa that have been named from Utah since 1978 are discussed in more detail than those species included on previous lists. Their original citations are also given. However, some discussion of the following items is attempted for each species: common name, federal and state recommendations, distribution and rarity, habitat, and elevational range. A list of collection data from specimens deposited in the herbarium of Brigham Young University is also given for each species, including year of collection, county, township and range, collector, and collection number. Maps showing the generalized localities and patterns of state distribution for each species are included.

Table 1 lists plant species officially designated threatened or endangered, as well as those currently under review, and gives the counties of occurrence. Table 2 lists Utah counties and the species known to occur in each. The numbers in parentheses indicate whether the plant is considered a category 1 or category 2 species. Figure 2 shows the distribution of candidate threatened or endangered species by township and range.

Asclepias cutleri Woodson
Map 9

Family: Asclepiadaceae.
Federal designation: threatened, category 2.

The Cutler milkweed is known in Utah from four collections at different localities in Grand and San Juan counties. It also occurs in northeastern Arizona. It grows in sandy soil and dunes in warm desert shrub and juniper communities. Associated plants are blackbrush, cliff rose, and Utah juniper. Elevation for the species ranges from 4300 to 5500 feet.

Grand County: T26S, R21E, WP Cottam 5799 (1935). San Juan County: 43S, 15E, BF Harrison 11967 (1952); T40S, R22E, ML Conrad, Morris, Dunn 6656 (1973); T40S, R22E, NH & PK Holmgren, and RC Barneby 8795 (1978).

Asclepias welshii N. & P. Holmgren
Map 10

Family: Asclepiadaceae.
Citation: Brittonia 31:110–114. 1979.
Federal designation: endangered, category 1.

The Welsh milkweed is a recently named species with a severely restricted distribution, known only from Kane County, Utah. There is sufficient information in existence to support the appropriateness of its being officially listed. The Welsh milkweed is a distinctive species with no obvious close relatives. Its habitat is the Coral Pink Sand Dunes, which consist chiefly of active and inactive quartz sand dunes. The elevational range extends from 5800 to 6400 feet. Plants are locally common within the habitat range. All known population locations occur on land administered by the Bureau of Land Management. However, portions of state and privately owned lands adjoin the present habitat areas. The habitat area is utilized for recreational activities, especially by off-road vehicles, and unregulated use could prove a threat to the species.

Kane County: T43S, R7W, AH Barnum 1323 (1964); T43S, R7W, SL and SL Welsh 9428 (1969); T43S, R7W, SL Welsh et al. 14217 (1976); T43S, R7W, N and P Holmgren 9009, Isotype (1978); T43S, R7W, NH Holmgren 9035 (1978); T43S, R7W, E & JE Neese 9624 (1980).

Astragalus ampullarius Wats.
Map 11

Family: Fabaceae.
Federal designation: threatened, category 2.

The Gumbo milkvetch is known only from southern Utah and adjacent Arizona, where it occurs near the Cockscomb to west of Kanab in Kane County and southeast of Motoqua in Washington County. This species of milkvetch grows on the Chinle and Tropic shale formations in a mixed desert shrub and scattered juniper community type. Elevational range extends from 3200 to 5400 feet.

Kane County: T43S, R6W, Mrs. Ellen Powell Thompson, s.n. Type (1872); southern Utah, Dr. E Palmer, s.n. (1877); southern Utah, Johnson, s.n. (1871); T43S, R6W, B Olson 19 (1970); T43S, R6W, WW Patton 132 (1970); T43S, R7W, SL Welsh and D Atwood 9709, 9710 (1970); T43S, R6W, SL Welsh and D Atwood 9720 (1970); T43S, R6W, ND Atwood 4599 (1973); T42S, R11/2W, ND Atwood 4602 (1973); T43S, R11/2W, ND Atwood 4664 (1973); T43S, R6W, RK Giersch 4280 (1978); T43S, R2W, NH Holmgren et al. 9141 (1979). Washington County: T43S, R15W, Ogden s.n. (1941); T42S, R11W, ND Atwood 5140 (1973); T41S, R17W, D Atwood 6586 (1976); T41S, R17W, LC Higgins & D Atwood 13683 (1983).

Astragalus barnebyi Welsh & Atwood
Map 12

Family: Fabaceae.
Federal recommendation: threatened, category 2.

The Barneby milkvetch is a rare species restricted to Garfield (where it occurs in three locations) and Wayne (where it occurs on

North Cainville Mesa) counties. It grows in a pinyon-juniper and mixed desert shrub community on the Navajo Sandstone and Emery Sandstone Member of the Mancos Shale Formation and on the Carmel Formation. Elevational range of the species extends from 4300 to 6000 feet.

GARFIELD COUNTY: T36S, R12E, BF Harrison 11706 (1951); T36S, R4E, SL Welsh 1697 (1962); T36S, R4E, D Isely et al. 8732 (1964); T35S, R10E, SL Welsh 3994 (1965); T36S, R9E, A Cronquist 10046 (1965); T36S, R4E, ND Atwood 5218 (1973); T37S, R4E, R Foster 3592 (1977); T35S, R3E, E Neese & S White 2999 (1977). WAYNE COUNTY: T28S, R9E, SL Welsh et al. 13096, 13015 (1976); T28S, R9E, SL, E, & M Welsh 16719 (1978).

Astragalus cronquistii Barneby

Map 13

Family: Fabaceae.
Federal designation: endangered, category 1.

The Cronquist milkvetch is known from the Comb Wash area west of Bluff, from near Aneth in San Juan County, and from a recent collection by Barneby in Montezuma County, Colorado. Its habitat is the desert shrub community on low gravelly ridges of red sandstone belonging to the Cutler and Morrison formations. Its elevational range extends from 4000 to 4900 feet. Localities were visited and collections taken from at least three populations during recent field seasons, indicating populations are currently stable.

SAN JUAN COUNTY: T40S, R20E, Welsh 1505 (1961); T40S, R20E, Cronquist 9123 (1961); T40S, R20E, D Atwood 2464 (1970); T40S, R20E, SL Welsh & D Atwood 9967 (1970); T40S, R20E, D Atwood 7187 (1979); T40S, R20E, E Neese et al. 10231 (1981); T40S, R20E, K Mutz 8161 (1981); T41S, R20E, K Mutz & A Hreha 81-63 (1981); T41S, R25E, Goodrich and Atwood 18189 (1983); T40S, R20E, RC Barneby 17897 (1983).

Astragalus desereticus Barneby

Map 14

Family: Fabaceae
Federal designation: threatened, category 2.

Jones first collected the Deseret milkvetch in 1893 and Tidestrom reported it as common in 1909, but the species was not relocated until 1981, when it was discovered by Elizabeth Neese south of Thistle along Highway 89. The plant grows on sandy road cuts and red conglomerate slopes in sagebrush-juniper and mixed mountain brush community types. Elevational range extends from 5000 to 6500 feet. Numerous landslides and subsequent flooding near the town of Thistle during the winter of 1982–83 did not affect populations of the Deseret milkvetch. **Note:** Initial collections by Jones and Tidestrom were cited as "below Indianola" and "Indianola," respectively. Indianola is in Sanpete County, but the plants undoubtedly were taken in Utah County.

UTAH COUNTY: ME Jones, Paratype (1893); Tidestrom 2249, TYPE GH (1909); T10S, R3E, E Neese 10378 (1981); T10S, R3E, E Neese 10391 (1981); T10S, R3E, E Neese 10399 (1981); T10S, R3E, SL Welsh 20629 (1981); T10S, R3E, ME Lewis 7444 (1983).

Astragalus equisolensis Neese & Welsh

Map 15

Family: Fabaceae.
Citation: Rhodora 83: 457. 1981.
Federal designation: endangered, category 2.

Populations of this small perennial milkvetch occur in the vicinity of Horseshoe Bend east of the Green River and south of Vernal in Uintah County. The species grows on river terrace sands and gravels overlying the Duchesne River Formation in a mixed desert shrub community type. Known elevation extends from 4750 to 5200 feet.

UINTAH COUNTY: T7S, R22E, E Neese 4313, Paratype (1978); T6S, R22E, Neese et al. 7251, Paratype (1979); T6S, R21E, Neese et al. 7254, Paratype (1979); T6S, R22E, E Neese and SL Welsh 7380, Holotype (1979); T6S, R22E, E Neese and SL Welsh 8278, Paratype (1979); T7S, R22E, D Atwood 7576 (1980).

Astragalus hamiltonii C. L. Porter

Map 16

Family: Fabaceae.
Federal designation: threatened, category 1.

The Hamilton milkvetch was previously known only from west of the Green River in the northwestern quarter of Uintah County. However, several additional populations were discovered in 1982 near the Colorado border about 10 miles north of Bonanza. Habitat for the species is the pinyon-juniper and mixed desert shrub communities in sandy soil overlying the Duchesne River Formation. Elevational range extends from 5200 to 6350 feet.

UINTAH COUNTY: T5S, R21E, CL Porter 5313, Paratype (1950); T4S, R20E, B Untermann 15a (1955); T5S, R21E, SL Welsh 515 (1956); T5S, R21E, SL Welsh 1782 (1962); T4S, R20E, SL Welsh & G Moore 6755 (1967); T1N, R1E UBM, S Goodrich 5377 (1976); T3S, R21E, S

Goodrich 5681 (1976); T1N, R1E, UBM, S Goodrich 5701 (1976); T4S, R20E, NH Holmgren et al. 8756 (1978); T1N, R1E UBM, E Neese & JS Peterson 5803 (1978); T5S, R20E, E Neese & JS Peterson 5824 (1978); T5S, R21E, Welsh & Neese 18354 (1979); T3S, R21E, E Neese & B Welsh 7523 (1979); T4S, R20E, E Neese & B Welsh 7534 (1979); T5S, R19E, E Neese & B Welsh 7536 (1979); T3S, R21E, SL Welsh 19632 (1980); T8S, R25E, K Thorne & K Snyder 1679 (1982); T5S, R21E, K Thorne & C Fullmer 1756 (1982); T8S, R25E K Thorne & C Fullmer 1757 (1982); T5S, R19E, K Thorne 1863 (1982); T8S, R25E, K Thorne 1879 (1982); T5S, R21E, E Neese & K Snyder 11775 (1982); T8S, R25E, E Neese et al. 11813 (1982); T8S, R25E, F Smith et al. 1693 (1982); T1N, R2E UBM, E Neese and J Sinclear 15053 (1983); T1N, R1E UBM, E Neese 14129a (1983); T1N, R2E UBM, E Neese 14123 (1983).

Astragalus harrisonii Barneby
Map 17

Family: Fabaceae.
Federal designation: endangered, category 2.

The Harrison milkvetch was known historically only from near Fruita in Wayne County and occurs in the pinyon-juniper community on sandy slopes and outcrops of the Navajo formation. It has a known elevational range of 5600 to 6000 feet. This plant occurs near Hickman Bridge in Capitol Reef National Park, where trampling by tourists is a current threat. A large subpopulation was discovered in 1982 along the terrace above Hickman Bridge, away from human activity. Possibly no action is necessary for the protection of this plant, except monitoring. In 1983 a large population was discovered in the Purple Hills region of the Waterpocket Fold.

WAYNE COUNTY: T29S, R6E, BF Harrison 7393 (1934); T29S, R6E, WP Cottam 9287 (1944); T29S, R6E, Barneby 13131, Isotype (1961); T29S, R6E, SL Welsh 5217, 5217b, Topotype (1966); T29S, R7E, K Harrison 1877 (1975); T29S, R6E, S Goodrich, SL Welsh 15641 (1981); T29S, R6E, SL Welsh 21065 (1982); T29S, R6E, E Neese 11312 (1982); T29S, R6E, D Atwood and S Goodrich 8622 (1982); T29S, R6E, SL and ER Welsh 21180 (1982).

Astragalus iselyi Welsh
Map 18

Family: Fabaceae.
Federal designation: endangered, category 1.

The Isely milkvetch is known from Grand and San Juan counties where it occurs on the La Sal Mountains and a few miles north to Onion Creek. Habitat for the plant is gypsiferous and seleniferous soils overlying the Paradox and Morrison formations in the pinyon-juniper community. Range of elevation for the species is from 5000 to 7600 feet.

GRAND COUNTY: T26S, R21E, ME Jones (1913); T27S, R23E, J Pederson 23 (1967); T24S, R24E, SL Welsh 11929, 11929a (1973); T27S, R23E, SL Welsh 16389 (1977); T27S, R23E, SL Welsh 16395 (1978); T24S, R24E, D Atwood 7147 (1979). SAN JUAN COUNTY: T27S, R23E, CS Schoener 75 (1971); T27S, R23E, S Daines 39 (1971); T27S, R23E, SL Welsh 10970, Holotype, Isotypes (1971); T27S, R23E, SL Welsh 19464 (1980); T27S, R23E, SL Welsh 19464g (1980); T27S, R23E, D Atwood 7470 (1980); T27S, R23E, D Atwood 7472 (1980); T27S, R23E, D Atwood 7473 (1980); T27S, R23E, K Mutz 81-56 (1981); T27S, R23E, SL Welsh 20842 (1981); T27S, R28E, D Atwood and B Thompson 8807 (1982); T26S, R23E, D Atwood et al. 8736 (1982).

Astragalus lentiginosus Dougl. ex Hook. var. *ursinus* (Gray) Barneby
Map 19

Family: Fabaceae.
Federal designation: endangered, category 2, possibly extinct.

The Bear Valley milkvetch was supposedly collected in 1877 by Dr. E. Palmer in Bear Valley, near Paragonah, northeastern Iron County. The type material deposited at NY notes the plant is abundant; however, there has been no collection made of the species since then. As a result of this plant's disappearance, no specific locality, elevation, or habitat information is known.

IRON (?) COUNTY: possibly in T33S, R8W, Dr. E. Palmer, Isotype-NY (1877).

Astragalus montii Welsh
Map 20

Family: Fabaceae.
Federal designation: endangered, category 1.

The Heliotrope milkvetch occurs at high elevations on Heliotrope Mountain in Sanpete County, on White Mountain in Sevier County, and on Ferron Mountain, where a large population was discovered by Bob Thompson in 1983. The plant grows on open outcrops of the Flagstaff Limestone formation near the timberline in the spruce-fir association. Elevation ranges from 11,000 to 11,200 feet. This taxon has been treated as a variety of *A. limnocharis* [as var. *montii* (Welsh) Isely]; however, it is distinctive in its larger purple-pink flowers with white wing tips. A proposed rulemaking is still in effect for this plant, and a management plan has been developed by the Forest Service to ensure protection of the species.

SANPETE COUNTY: T19S, R4E, SL and J Welsh 15404, Holotype (1977); T19S, R4Ek, ME Lewis 4312 (1976); T19S, R4E, ME Lewis 4775 (1977); T19S, R4E, D Atwood 8000 (1981). SEVIER COUNTY: T21S, R5E, D Atwood 9132 (1982).

Astragalus sabulosus M.E. Jones

Map 21

Family: Fabaceae.
Federal designation: threatened, category 2.

The Cisco milkvetch is known only from Grand County, where it occurs near the towns of Cisco and Thompson, and in Court House Wash. This showy plant with large yellowish flowers occurs in the salt desert shrub community on hills and knolls of the Mancos Shale and Morrison formations. Elevational range of the species is from 4200 to 5200 feet.

GRAND COUNTY: banks of Grand River, ME Jones, Isotype (1890); T21S, R20E, OA Beath (1940); T21S, R20E, SL Welsh 3888, 3888a, 3887, 4021 (1965); T21S, R23E, SL Welsh 13337, 13337a (1976); T21S, R23E, SL Welsh & K Taylor 14639, 14746 (1977); T21S, R20E, K Mutz & A Hreha 81-25 (1981); T21S, R23E, SL Welsh 20840 (1981); T24S, R20E, D Atwood and B Thompson 8809 (1982).

Astragalus striatiflorus Jones

Map 22

Family: Fabaceae.
Federal designation: threatened, category 2.

The escarpment milkvetch occurs in dune areas, on sandy terraces, in stream channels, and in sandy depressions on ledges in Kane and Washington counties. Its principal population is in the Coral Pink Sand Dunes. Elevational range for this sand-dwelling milkvetch extends from 4000 to 6300 feet.

KANE COUNTY: T42S, R5W, Ripley & Barneby 4815 (1942); T43S, R7 & 8W, ES Castle 108, 113 (1953); T42S, R7W, NH Holmgren et al. 2012 (1965); T43S, R7W, SL Welsh 5302 (1966); T40S, R1W, ND Atwood 3682 (1972); T43S, R1W, LC Higgins 3946 (1972); T43S, R7W, SL Welsh & KH Thorne 14688 (1977); T42S, R6W, R and D Foster 3973 (1977); T43S, R7W, SL Welsh & S Clark 15540, 15552 (1977).

Astragalus subcinereus A. Gray var. *basalticus* Welsh

Map 23

Family: Fabaceae.
Citation: Great Basin Naturalist 38: 302. 1978.
Federal designation: threatened, category 2.

This variety of the silver milkvetch occurs on volcanic gravels in eastern Sevier and western Emery counties. The plants grow in pinyon-juniper and sparse ponderosa pine woods at an elevation extending from 6000 to 8000 feet. It differs from var. *subcinereus* in its narrower pods, generally larger flowers, and longer stems.

EMERY COUNTY: T25S, R6E, SL Welsh 14788 (1977). SEVIER COUNTY: T24S, R5E, SL Welsh et al. 6445, Paratype (1967); T24S, R5E, SL Welsh et al. 6447, Holotype (1967); T24S, R5E, SL Welsh, S Clark 16186 (1977); T24S, R5E, S White, G Moore 89 (1979); T24S, R5E, E Neese et al. 7632 (1979); T23S, R5E, R Foster 8282 (1979).

Astragalus uncialis Barneby

Map 24

Family: Fabaceae.
Federal designation: threatened, category 2.

The Currant milkvetch was previously known only from northeastern Nye County, Nevada, where it occurs along the foothills of the White Pine and Pancake ranges in sandy gullies and on gravelly dry knolls. Recently, however, this tiny milkvetch was discovered in Millard County between 15 to 30 miles southwest of Delta on abandoned beaches of calcareous gravels and silty clay soil. These records were made in 1981, and the plant is now included as one of Utah's rare species. In Utah it is most commonly associated with a shadscale-budsage community type, and its elevational range extends from 4600 to 5300 feet.

MILLARD COUNTY: T18S, R10W, SL Welsh 20312 (1981); T18S, R10W, SL Welsh 20619 (1981); T18S, R10W, E Neese & S Goodrich 10415 (1981); T18S, R10W, E Neese & S Goodrich 10416 (1981); T18S, R11W, E Neese & S Goodrich 10429 (1981); T18S, R11W, E Neese & S Goodrich 10438, 10439 (1981); T19S, R11W, S Goodrich 16527 (1982); T18S, R9W, BT Welsh 1310 (1982); T19S, R11W, R Kass and K Preston 801 (1982).

Castilleja aquariensis N. Holmgren

Map 25

Family: Scrophulariaceae
Federal designation: endangered, category 2.

The aquarius paintbrush is known only from the Boulder Mountain area on the Aquarius Plateau in Garfield County. One collection has been made just north of the county line in Wayne County. The plant occurs at high elevations (from 9600 to 1100 feet) in subalpine grassland and sagebrush meadows. It is eaten by livestock, and one principal population survives in an exclosure.

Garfield County: T32S, R2E, N. & P. Holmgren 4726, Isotype (1970); T31S, R2E, N. & P. Holmgren 8584 (1977); T31S, R2E, E Neese & S White 3584 (1977); T32S, R2E, ME Lewis 5915 (1979); T32S, R2E, D Atwood and B Thompson 7656, 7657 (1980); T32S, R1E, D Atwood & B Thompson 7658 (1980); T32S, R2E, D Atwood 9494, 9495 (1983). Wayne County: T31S, R2E, ME Lewis 6091 (1979).

Castilleja revealii N. Holmgren

Map 26

Family: Scrophulariaceae

Federal designation: endangered, category 1.

When the Reveal paintbrush was named in 1973, known distribution of the plant was restricted to the type locality near Bryce Canyon National Park in Garfield County. During the 1980 field season two additional populations were discovered, one approximately 30 miles north of Bryce Canyon on the Aquarius Plateau, and the other near Cedar Breaks National Monument in Iron County. Habitat for this paintbrush species is the ponderosa pine woodland in the gravelly soil of limestone outcrops. Elevational range extends from 7,500 to 10,000 feet.

Garfield County: T37S, R4W, Weight, Paratype (1931); T37S, R4W, Holmgren and Reveal 2017, Isotype (1965); T37S, R4W, R Graybosch 934 (1980); T32S, R1E, D Atwood & B Thompson (1980); T36S, R4½W, D Atwood 7921 (1981). Iron County: T36S, R9W, D Atwood & B Thompson 7675.

Cirsium virginensis Welsh

Map 27

Family: Asteraceae.

Citation: Welsh, SL. 1982. Great Basin Naturalist 42: 199–202.

Federal designation: threatened, category 2.

The Virgin thistle is a recently described species of this genus. It occurs near St. George in Washington County, and in Mohave County, Arizona. The plant does not appear to be closely allied to other groups of thistles represented in the state, and its relationships are unknown. It occurs in saline seeps and stream terraces in shadscale, creosote bush, mesquite, and hanging garden communities. Elevation ranges from approximately 2800 to 3100 feet.

Washington County: T42S, R15W, DH Galway 8470 (1935); T42S, R15W, DH Galway (1938); T42S, R15W, T Fillmore (1960); T43S, R17W, LC Higgins 836 (1966); T42S, R15W, LC Higgins 10998 (1977); T42S, R15W, SL Welsh and D Atwood 21052 (1982); T42S, R15W, BT Welsh 1383 (1982); T42S, R15W, SL Welsh 21234, Holotype (1982); T42S, R15W, LC Higgins 13155 (1982); T42S, R15W, LC Higgins 13752 (1983).

Coryphantha missouriensis (Sweet) Britt. & Rose var. *marstonii* (Clover) L. Benson

Map 28

Family: Cactaceae.

Federal designation: endangered, category 2.

The range of this species in Utah is thought to extend from northwest of Boulder in Garfield County to the east side of the Buckskin Mountains on the Kaibab Plateau in Kane County. However, the type, which was collected by Clover at Hell's Backbone in 1937, was not preserved. The neotype, from the Buckskin Mountains, Kane County, was collected by Benson in 1953 (Benson, L. 1982. The cacti of the United States and Canada) and is the only other known locality in Utah. No collection of this species has been made since 1953. Known habitat is on hillsides in the ponderosa pine, pinyon-juniper, and mixed shrub-grass communities at 5000 to 7000 feet elevation.

Cryptantha barnebyi Johnst.

Map 29

Family: Boraginaceae.

Federal designation: endangered, category 1.

The Barneby catseye is endemic to the white shale knolls of the Green River Formation in Uintah County between 5000 and 6000 feet elevation. Associated vegetative types include shadscale, greasewood, pinyon-juniper, mixed desert shrub, and sagebrush communities. The known distribution of this plant has been substantially enlarged by field work of recent seasons. Twenty-two collections of the species were made during the 1982 field season alone. Populations occur, however, in the area of Uintah County currently being considered for oil shale development.

Uintah County: T12S, R24E, Ripley & Barneby 8748, Holotype, GH (1947); T13S, R22E, NH Holmgren & JL Reveal 1858 (1965); T13S, R22E, LC Higgins 1584, 1586, 1587 (1968); T13S, R22E, ND Atwood 1562 (1968); T13S, R22E, LC Higgins 1599, 1601 (1968); T13S, R22E, LC Higgins 1884, 1877, 1887 (1969); T12S, R22E, E Neese & JS Peterson 4726 (1978); T11S, R24E, E Neese & JS Peterson 6101, 6104 (1978); T13S, R22E, E Neese & JS Peterson 6110 (1978); T12S, R22E, JS Peterson 1442 (1979); T12S, R23E, JS Peterson 1452 (1979); T13S, R23E, JS Peterson 1465 (1979); T12S, R22E, M Williams & D Atwood 80-138-4 (1980); T12S, R24E, E Neese & F Smith 11390 (1982); T12S, R24E, K Thorne & B Neely 1785 (1982); T11S, R25E, E Neese & C Fullmer 11470

(1982); T12S, R24E, K Thorne & B Neely 1787 (1982); T12S, R24E, K Thorne & B Neely 1790 (1982); T11S, R25E, E Neese & C Fullmer 11477 (1982); T13S, R25E, K Thorne & B Neely 1850 (1982); T12S, R20E, E Neese et al. 11547 (1982); T11S, R25E, E Neese 11925 (1982); T11S, R25E, E Neese & J Trent 11928 (1982); T12S, R25E, Kass and Trent 845 (1982); T11S, R25E, Kass and Trent 825 (1982); T12S, R25E, F Smith 1605 (1982); T12S, R24E, K Thorne 1731 (1982); T12S, R24E, B Neely and K Thorne 817, 824 (1982); T12S, R25E, Kass and Trent 837, 838 (1982); T12S, R25E, F Smith and K Syder 1613 (1982); T12S, R24E, Kass and Trent 847 (1982); T12S, R25E, F Smith and J Trent 1788 (1982); T12S, R25E, E Neese and J Trent 12365 (1982); T13S, R25E, E Neese and J Trent 12369 (1982).

Cryptantha compacta Higgins
Map 30

Family: Boraginaceae.
Federal designation: threatened, category 1.

The compact catseye inhabits gravelly loam slopes, ridges, and outcrops of limestone or Sevy Dolomite in shadscale, matchweed, and mixed shrub communities. Elevation is from 5000 to 6500 feet. Historical populations within or near the Desert Experimental Range in the southwestern portion of Millard county have been recently documented as viable. Recent field work has also extended the distributional range of the plant in Millard County to near Notch Peak and near Oak City; and in 1983 populations of the plant were located in Beaver and Tooele counties as well.

BEAVER COUNTY: T26S, R19W, S Goodrich 18525, 18541 (1983). MILLARD COUNTY: Whitesage Valley, BF Harrison 6371 (1935); T25S, R18W, B Wood 102 (1964); T25S, R18W, RC Holmgren 501 (1966); T24S, R17W, RC Holmgren 521 (1966); T24S, R18W, LC Higgins 1462, 1613 (1968); T25S, R17W, SL Welsh 13313 (1976); T25S, R17W, K Ostler & D Anderson 1040, 1060 (1978); T24S, R17W, K Ostler & D Anderson 1124 (1978); T25S, R18W, K Ostler & D Anderson 1230 (1978); T25S, R18W, SL Welsh & M Chatterley 19574 (1980); T19S, R14W, C Fullmer 11 (1980); T16S, R4W, S Goodrich 14364 (1980); T16S, R4W, S Goodrich 15607 (1981); T18S, R4W, S Goodrich 15554 (1981); T19S, R14W, R Kass and S White 468 (1981); T24S, R17W, S Goodrich 16551 (1982); T25S, R17W, S Goodrich 16628 (1982); T23S, R16W, K Heil 1650 (1982); T24S, R17W, S Goodrich 16955 (1982); T25S, R17W, S Goodrich 16635 (1982); T25S, R17W, S Goodrich 16632, 16930 (1982); T19S, R14W, R Kass 296 (1982); T25S, R15W, S Goodrich 18729 (1983); T25S, R15W, S Goodrich 18727 (1983); T24S, R18W, S Goodrich 18688 (1983); T25S, R18W, K Heil 1650 (1983). TOOELE COUNTY: T10S, R6W, S Goodrich 18884, 18894, 19067 (1983).

Cryptantha creutzfeldtii Welsh
Map 31

Family: Boraginaceae.
Citation: Welsh, SL. 1982. Great Basin Naturalist 42: 203–204.
Federal designation: none.
UNPS recommendation: threatened, category 2.

The Creutzfeldt catseye is a recently described species known from Carbon and Emery counties. It occurs on the Blue Gate Member of the Mancos Shale Formation below the coal measures of the Mesa Verde Group. Associated vegetative types include shadscale, pinyon-juniper, sagebrush, and saltbush communities. Elevational range extends from 6000 to 6700 feet.

CARBON COUNTY: T14S, R10E, L Arnold s.n. (1981). EMERY COUNTY: T21S, R6E, SL Welsh 20470 Holotype (1981); T18S, R7E, J Allan 762 (1976); T21S, R6E, E Neese & S White 7362 (1979); T20S, R6E, D Atwood 7518 (1980); T22S, R6E, S White 15 (1979); T18S, R7E, J Allan 947 (1979); T21S, R6E, S White & G Moore 77 (1979); T20S, R6E, M Lewis 7411 (1982).

Cryptantha elata (Eastw.) Payson
Map 32

Family: Boraginaceae.
Federal designation: threatened, category 2.

The tall catseye is restricted to Grand County in Utah but also occurs in Mesa County, Colorado. It grows on the heavy clay soil of the Mancos Shale Formation in a mixed desert shrub community type. Elevational range extends from 4600 to 5500 feet.

GRAND COUNTY: T22S, R24E, SL Welsh 6952 (1968); T22S, R24E, LC Higgins 1479, 1479a (1968).

Cryptantha jonesiana (Payson) Payson
Map 33

Family: Boraginaceae.
Federal designation: threatened, category 2.
UNPS recommendation: category 3C.

Distribution of the Jones catseye is limited to the San Rafael Swell in Emery County, where it occurs on clay soil barrens of the Moenkopi Formation. Habitat includes pinyon-juniper and mixed desert shrub communities. Elevational range of the species extends from 5200 to 6800 feet.

EMERY COUNTY: San Rafael Swell, ME Jones (1914); T19S, R13E, ND Atwood 1301 (1968); T20S, R11E, LC Higgins & JL Reveal 1265 (1968); T21S, R12E, LC Higgins & JL Reveal 1275, 1299 (1968); T19S, R11E, LC Higgins 1308 (1968); T21S, R12E, LC Higgins 1322 (1968); T19S, R13E, ND Atwood 2418 (1970); T22S

R12E, S Daines 22 (1971); T22S, R12E, KD Kaneko 1 (1971); T22S, R12E, SL Welsh 10953 (1971); T20S, R11E, SL Welsh 10959, 10960 (1971); T22S, R12E, M Wright 57 (1971); T20S, R11E, S Daines 24 (1971); T20S, R11E, KD Kaneko 21 (1971); T20S, R11E, NH & PK Holmgren & RC Barneby 8779 (1978); T19S, R13E, Thorne & Neese 494 (1979); T19S, R14E, JG Harris 69 (1979); T24S, R10E, S Goodrich & D Atwood 16580 (1982); T22S, R12E, LC Higgins 13176 (1983).

Cryptantha ochroleuca Higgins

Map 34

Family: Boraginaceae.
Federal designation: endangered, category 1.
UNPS recommendation: category 2.

The yellow-white catseye is known only from Garfield County and is found growing on the pink limestone member of the Wasatch Formation in Red Canyon in the ponderosa and bristlecone pine zone. Its elevational range is from 6500 to 8000 feet. Collections from the area within the past two years indicate the populations are still viable.

Garfield County: T35S, R4½W, Higgins 1788 Holotype (1968); T35S, R4½W, JL & CG Reveal 1031 (1968); T35S, R4½W, ND Atwood 1879 (1969); T35S, R4½W, ND Atwood 1890 (1969); T35S, R4½W, ND Atwood 1891 (1969); T35S, R4½W, D Atwood 7627, 7631 (1980); T36S, R4½W, ND Atwood 7925 (1981).

Cuscuta warneri Yuncker

Map 35

Family: Cuscutaceae.
Federal designation: endangered, category 2, possibly extinct.

The Warner dodder is known only from the type collection, taken in the vicinity of Flowell, Millard County. The plant is parasitic on Phyla cuneifolia, a species uncommon in the Great Basin, but locally abundant near a temporary lake known as "The Sink," near Flowell. Mr. Lloyd Warner conducted a search of the type locality in 1984 with Kaye Thorne but was unable to locate the cuscuta, even though the *phyla* was common.

Millard County: ca T21S, R5W, L Warner, Isotype (1957).

Cycladenia humilis Benth. var. *jonesii* (Eastw.) Welsh & Atwood

Map 36

Family: Apocynaceae.
Federal designation: endangered, category 1.

There are five known populations of the Jones cycladenia. The type collection was discovered by ME Jones in 1914 and occurs in Emery County. It was rediscovered in 1979 and now an additional population on the San Rafael Desert in Emery County is also known. Two populations occur in Grand County, one in Castle Valley and the other near Onion Creek, northeast of Moab. In 1983 a fifth, disjunct population was discovered west of Waterpocket Fold in Garfield County. This beautiful and distinctive taxon grows on the Cutler, Summerville, and Chinle formations in salt desert shrub, ephedra-buckwheat, blackbrush, and scattered juniper communities. Elevational range extends from 4400 to 5970 feet.

Emery County: Jones, Isotype (1914); T22S, R13E, JG Harris 606 (1979); T22S, R13E, J Harris, S Welsh, E Neese 633 (1979); T22S, R13E, JG Harris 654 (1980); T22S, R13E, BT Welsh 350 (1980); T22S, TR13E, D Atwood 7449 (1980); T22S, R13E, JG Harris 694 (1980); T22S, R14E, E Neese 8700 (1980); T22S, R14E, E Neese 8713 (1980); T22S, R14E, E Neese 8714 (1980); T22S, R14E, JG Harris 807 (1980). Garfield County: T36S, R8E, BT Welsh, M Chatterley 1442, 1443 (1983). Grand County: T25S, R23E, SL Welsh 7013 (1968); T25S, R23E, SL Welsh, G Moore 7168 (1968); T25S, R23E, SL Welsh et al. 14754 (1977); T24S, R24E, D Atwood 7159 (1979); T24S, R24E, E Neese, SL Welsh 8767, 8768 (1980).

Cymopterus beckii Welsh & Goodrich

Map 37

Family: Apiaceae.
Federal designation: threatened, category 2.

Known distribution of the Beck cymopterus is restricted entirely to the Capitol Reef region of Wayne County. However, its full range is yet to be determined. The plant grows in sandy crevices along cliff bases of Navajo Sandstone at elevations extending from 5500 to 7000 feet.

Wayne County: T29S, R6E, BF Harrison 7392, Paratype (1934); T29S, R6E, DE Beck, Holotype (1938); T29S, R6E, S Goodrich & D Atwood 16564 (1982); T29S, R6E, SL & ER Welsh 21175d (1982); T29S, R6E, SL Welsh 21261 (1982); T29S, R6E, D Atwood, S Goodrich 8623 (1982).

Cymopterus higginsii Welsh

Map 38

Family: Apiaceae.
Federal designation: threatened, category 1.

The Higgins biscuitroot is pink flowered and is known only from Kane County from northwest of to several miles east of Glen Canyon City. It occurs on saline soils of the

Tropic Shale Formation in either desert or salt desert shrub communities. Elevation extends from 4200 to 4800 feet.

Kane County: T42S, R4E, D Atwood 3439, Paratype (1972); T42S, R2E, Atwood et al. 3493, Paratype (1972); T42S, R6E, Atwood 4549, Paratype (1973); T42S, R4E, SL Welsh 12740, Holotype (1975).

Cymopterus minimus (Mathias) Mathias

Map 39

Family: Apiaceae.
Federal designation: endangered, category 2.

This species of biscuitroot is known from Iron (near Cedar Breaks National Monument), Garfield, and Kane counties, where it occurs on the pink and white limestone of the Wasatch or Claron formations. It is associated with ponderosa pine, bristlecone pine, spruce-fir, and perhaps pinyon-juniper communities. The plant is similar to *Cymopterus purpureus* var. *rosei* and var. *purpureus*. It may only be a part of the *purpureus* complex, but it is currently recognized at the specific level. Elevational range of the plant is from 10,000 to 10,500 feet.

Garfield County: T35S, R4½W, JL & CG Reveal 1030 (1968); T36S, R6W, D Atwood, B Wood 5329 (1973); T36S, R4W, NH & PK Holmgren 8449 (1977); T35S, R1W, E Neese, S White 3848 (1977); T37S, R4W, R & D Foster 4798 (1977); T37S, R4W, D Atwood (1980); T35S, R4½W, D Atwood 7628 (1980); T36S, R4½W, D Atwood 7931 (1981); T34S, R1W, D Atwood 8165 (1981); T34S, R1W, S Goodrich 15664 (1981); T34S, R1W, ES Nixon 11584 (1982). Iron County: T36S, R9W, Mathias 723, Type-MO (no date); T36S, R9W, B Maguire 19027, non-BRY (1940); T36S, R9W, D Atwood & B Thompson 7673 (1980); T36S, R9W, J Anderson (1981); T35S, R9W, SL Welsh 21295 (1982). Kane County: T38S, R8W, D Atwood 7436 (1979); T38S, R9W, D Atwood, B Thompson 7693 (1980); T41S, R4½W, J Grimes 2034 (1981); T39S, R5W, D Atwood 7941 (1981).

Dalea flavescens (Wats.) Welsh var. *epica* (Welsh) Welsh & Chatterley comb. nov. [based on: *Dalea epica* Welsh Great Basin Nat. 31:90, 1971]

Map 40

Family: Fabaceae.
Federal designation: threatened, category 2.

Until recently there was only one known population of the Hole-in-the-rock prairie clover. It was located along the Hall's Crossing road southwest of Lake Powell in San Juan County. However, in 1983 the plant was also found growing in the dry wash sands of Ticaboo Canyon on the Garfield County side of Lake Powell and close to Hall's Crossing in San Juan County. This taxon is now combined in recognition of its relationship to *Dalea flavescens* (Wats.) Welsh, a Navajo Basin endemic, within whose range it occurs. The variety grows in sand dunes and on bedrock of the Navajo Sandstone Formation and is associated with a blackbrush-sagebrush community type. Elevation is from 3750 to 4800 feet.

Garfield County: T35½S, R13E, SL Welsh et al. 22034 (1983). San Juan County: T38S, R12E, SL Welsh 5205, Holotype (1966); T39S, R13E, SL Welsh 9816; T39S, R13E, SL Welsh & D Atwood 9990,9994 (1970); T38S, R11E, LC Higgins, BT Welsh 13179 (1983).

Draba maguirei C.L. Hitchc. var. *Burkei* C.L. Hitchc.

Map 41

Family: Brassicaceae.
Federal designation: threatened, category 2.

This variety of the Maguire whitlowgrass was named in 1932 and was known only from the type locality in Box Elder County east of Honeyville until 1972 when two additional populations were discovered in Weber County on the slopes of Mt. Ogden and Mt. Ben Lomond. It occurs at elevations ranging from 8500 to 9600 feet on rocky and talus slopes in the subalpine conifer zone.

Box Elder County: T10N, R3W, M Burke 2968,2969,2970, Type-UTS (1932). Weber County: T5N, R1E, SL Clark 2214 (1972); T7N, R1W, SL Clark 2332 (1972).

Epilobium nevadense Munz

Map 42

Family: Onagraceae.
Federal designation: threatened, category 2.

The Nevada willowherb was previously known only from Clark County, Nevada, and Washington County, Utah. During the 1980 field season it was also located in the Canyon Mountains in Millard County. Habitat for this species is rocky limestone outcrops and talus slopes in pine duff of the ponderosa pine–aspen community. Elevation extends from 7500 to 9200 feet.

Millard County: T17S, R3W, S Goodrich 14918 (1980); T17S, R3W, S Goodrich 15144 (1980). Washington County: T42S, R18W, Higgins 778 (1966); T38S, R19W, D Atwood 6822 (1976); T42S, R18W, J Anderson (no date).

Erigeron cronquistii Maguire
Map 43

Family: Asteraceae.
Federal designation: threatened, category 1.

The Cronquist daisy is restricted to northeastern Cache County. It occurs in rock crevices on cliffs in fir and spruce communities at elevations extending from 5800 to 8200 feet.

CACHE COUNTY: T14N, R2E, Maguire & Maguire 14063 (1936); T14N, R3E, Maguire & Maguire 14122 (1936); T14N, R2E, Maguire & Maguire 14173 (1936); T13N, R3E, B Maguire et al. 13923 (1936); T12N, R3E, Maguire 16681, Type-NY (1939); T13N, R3E, K & JP Thorne 2143 (1982).

Erigeron kachinensis Welsh & Moore
Map 44

Family: Asteraceae.
Federal designation: endangered, category 2.

The kachina daisy is known from three populations, one in San Juan County in the area of Natural Bridges National Monument, another in Dark Canyon, and a third in Colorado. Habitat for this narrow endemic is moist sandstone outcrops in hanging garden communities. Elevation of the Natural Bridges locality is approximately 5920 feet. This population is passed by a major tourist trail.

SAN JUAN COUNTY: T37S, R17E, Welsh and Moore 2398, Holotype (1963); T37S, R17E, SL Welsh & G Moore 7160 (1968); T34S, R16E, LM and JS Shultz 2016 (1976); T36S, R17E, LC Higgins et al. 14257 (1983).

Erigeron maguirei Cronq. var. *maguirei*
Map 45

Family: Asteraceae.
Federal designation: endangered, category 1.

The typical variety of the Maguire daisy is known only from a restricted area in Emery County. A collection of the daisy on the San Rafael Swell in 1980 and one in 1982 are BRY's only records of the species since the type collection in 1940. Elevational range is from 5400 to 5500 feet, and the habitat is a desert shrub community on the Navajo Sandstone Formation. A collection from near Fruita in 1982 and two collections from Wayne County (1934, 1938), previously considered as *E. maguirei*, have been found to vary slightly from the type materials and are now designated *var. harrisonii* Welsh.

EMERY COUNTY: T20S, R11E, Maguire 18459, Type (1940); T20S, R11E, JG Harris 956 (1980); T20S, R11E, J Anderson 373 (1982).

Erigeron maguirei Cronq. var. *harrisonii* Welsh
Map 46

Family: Asteraceae.
Original citation: Welsh, S.L. 1983. Great Basin Naturalist 43: 367.
Federal designation: none.
UNPS recommendation: threatened, category 2

This variety is distinguished only technically from var. *maguirei*, which has fewer heads per stem, wider ray corollas, and longer disk corollas. The taxa are separated geographically, with var. *harrisonii* occurring near Fruita in Wayne County. The morphological differences may be the result of ecological responses, but the plant is currently recognized as a separate taxon. It grows in Navajo Sandstone, in dry sandy washes, within a juniper community type. Elevation is approximately 5700 feet.

WAYNE COUNTY: T29S, R6E, BF Harrison 7385 (1934); T29S, R6E, DE Beck s.n. (1938); T29S, R6E, SL and ER Welsh 21178 (1982); T29S, R6E, SL Welsh 21262 (1982).

Erigeron mancus Rydb.
Map 47

Family: Asteraceae.
Federal designation: threatened, category 2.

The depauperate daisy has, since its first observation, remained obscure. It is known only from the La Sal Mountains, where it occurs in both Grand and San Juan counties. Habitat for the species is rocky igneous ridges in a spruce-fir community type. Elevational range extends from 10,000 to 12,000 feet. The type specimen was collected by Rydberg and Garrett in 1911. Only two specimens from the state are deposited at BRY.

UTAH: La Sal Mtns., Rydberg & Garrett 8671, Type-NY (1911). GRAND COUNTY: T26S, R24E, ME Lewis 6330 (1979). SAN JUAN COUNTY: T27S, R24E, ND Atwood 7103 (1978).

Erigeron proselyticus Neson
Map 48

Family: Asteraceae.
Federal designation: endangered, category 1.

Until recently the cliff daisy was known only from near Cedar Breaks National Monument in Iron County. However, in 1979 an additional population was discovered some miles to the south of Cedar Breaks in Kane County near Navajo Lake. Known distribution is currently restricted to these two localities, until 1984, when materials were taken in the Kolob area of Washington County in a ponderosa pine community. The spruce-fir or bristlecone pine communities and talus slopes of the Wasatch Formation are characteristic of appropriate habitat for the plant. Elevational range extends from 8,500 to 10,000 feet.

IRON COUNTY: T37S, R9W, Maguire 14947, Holotype-NY (1934); T36S, R9W, WP Cottam (1948); T37S, R9W, R and D Foster 4587 (1977); T36S, R9W, D Atwood & B Thompson 7667 (1980); T36S, R9W, D Atwood & B Thompson 7680 (1980); T37S, R10W, J Anderson (1980); T37S, R9W, R Kass 1097 (1982); T37S, R10W, SL Welsh & E Neese 21351 (1982). KANE COUNTY: T38S, R8, D Atwood 7431 (1979); T38S, R9W, D Atwood & B Thompson 7691 (1980).

Erigeron sionis Cronq.

Map 49

Family: Asteraceae.
Federal designation: endangered, category 2.

Until recently the Zion fleabane was known only from the type collection obtained by Pilsbry in 1925 from Zion National Park in Washington County. The species was not relocated for more than 50 years. In 1979 a population of the plant was located in a side canyon of Parunaweap Canyon just outside the park boundary in Kane County. In the fall of 1982, a collection was made along the west rim trail of the park. A specimen from 1925, collected by A. M. Woodbury and originally determined to be *E. trifidus*, was annotated to *E. sionis* by Welsh in 1981. This collection also came from the west rim trail. Though the known distribution of this rare endemic has not been greatly enlarged, current populations of it are now known, whereas previously it was obscure. Habitat for the species is rock crevices of the Navajo Sandstone Formation in the ponderosa pine community. Elevation is from 4400 to 7500 feet.

WASHINGTON COUNTY: Zion National Park, Pilsbry s.n., Type (1925); T40S, R10W, AM Woodbury (1925); T42S, R9W, J Anderson, Cedar City BLM (1979); T40S, R10W, R Kass et al. 1095 (1982); T40S, R10W, E Neese, R Kass 12613 (1982); T41S, R10W, SL Welsh 21377 (1982).

Erigeron untermannii Welsh & Goodrich

Map 50

Family: Asteraceae.
Original citation: SL Welsh. 1983. Great Basin Naturalist 43: 367.
Federal designation: none.
UNPS recommendation: category 2.

The Untermann daisy is a recently described taxon occurring in Duchesne and Uintah counties. It is endemic to the calcareous shales and sandstones of the Uinta and Green River formations and occurs in the pinyon-juniper community at elevations ranging from 7000 to 7800 feet. It is probably allied to *E. compactus* Blake but also has similarities with *E. nematophyllus* Rydb.

DUCHESNE COUNTY: T5S, R6W UBM, ND Atwood 7554 Holotype (1980); T5S, R6W UBM, S Goodrich 5317 (1976); T5S, R6W UBM, S Goodrich 12402 (1979). UINTAH COUNTY: Red Pine Canyon, S Goodrich 5652 (1976).

Eriogonum ammophilum Reveal

Map 51

Family: Polygonaceae.
Federal designation: endangered, category 1.

The sand-loving buckwheat was previously known only from near Ibex Warm Point in Millard County. However, recent collections have extended the known range westward into the Ferguson Desert. Deep sandy alluvium in desert shrub and juniper community types are habitats of this buckwheat. This elevational range of the plant extends from 5200 to 6000 feet. This plant was reduced to varietal rank within *E. nummulare* by Welsh (1984).

MILLARD COUNTY: T22S, R14W, RC Holmgren 479 (1965); T22S, R14W, Holmgren & Holmgren Type-US (1970); T23S, R14W, P Beels (1979); T20S, R17W, SL Welsh & M Chatterley 19503 (1980); T22S R15W, SL Welsh & M Chatterley 19506, 19684, 20125 (1980); T22S, R14W, SL Welsh 20614 (1981); T22S, R14W, SL Welsh 20617 (1981); T21S, R14W, R Kass 997 (1982); T20S, R17W, D Atwood 8904 (1982).

Eriogonum aretioides Barneby

Map 52

Family: Polygonaceae.
Federal designation: endangered, category 1.

The Widtsoe buckwheat is known from only two locations within Garfield County, one near the town of Widtsoe and the other on the low ridges of Red Canyon. Habitat for the species is dry ridge tops and rocky outcrops of the pink limestone member of the Wasatch formation in a scattered pinyon-juniper and western bristlecone pine community. Elevational range extends from 7500 to 8000 feet.

GARFIELD COUNTY: T34S, R2W, Ripley & Barneby 8570, Type-NY (1947); T34S, R2W, Holmgren et al. 2254 (1965); T35S, R4W, Rose & Reveal (1969); T35S, R4W, JL & CG Reveal 4470 (1976); T35S, R4W, D Atwood 7923 (1981).

Eriogonum cronquistii Reveal
Map 53

Family: Polygonaceae.
Federal designation: endangered, category 2.

Only one population of the Cronquist buckwheat is known to exist, and it occurs on the west slope of Bull Mountain in Garfield County. Habitat for the species is the gravelly soil of granitic talus slopes in the mountain shrub community type at 8300 to 9250 feet elevation. This plant was reduced to varietal rank within *E. corymbosum* by Welsh (1984).

Garfield County: T31S, R11E, Cronquist & Holmgren, Paratype (1961); T31S, R11E, Holmgren & Reveal 3010, Isotype (1967); T31S, R11E, K Mutz 81-357 (1981); T31S, R11E, K Mutz 81-361 (1981).

Eriogonum humivagans Reveal
Map 54

Family: Polygonaceae.
Federal designation: endangered, category 2.

The spreading buckwheat is known only from east of Monticello in San Juan County, where it occurs along the roadside of Utah Highway 666. Only one population of this species exists in an area occupied by dry farms. Habitat for the spreading buckwheat consists of sandy soil and alluvium clay hills in the desert shrub community. Elevation is approximately 6800 feet. This species was relocated in 1981, but no new populations have been discovered. This plant was reduced to varietal rank within *E. corymbosum* by Welsh (1984).

San Juan County: T34S, R26E, Holmgren & Reveal 3001, Isotype (1966); T34S, R26E, Reveal 2546 (1971); T34S, R26E, Holmgren, Shultz, and Shultz 16316 (1976); T34S, R26E, K Mutz 81-370 (1981).

Eriogonum lancifolium Reveal & Brotherson
Map 55

Family: Polygonaceae.
Federal designation: endangered, category 2.

The lance leaf buckwheat is known primarily from Carbon County, where it occurs in a small area east of Wellington. However, an additional population was recently discovered in Emery County south of the junction of US I-70 and Utah Highway 10. The grayish clay soil of the Mancos Shale Formation and the salt desert shrub community are representative of the habitat for this species. Elevational range extends from 4900 to 5700 feet. This name was reduced to synonymy within *E. corymbosum* by Welsh (1984).

Carbon County: T15S, R11E, Welsh & Moore 1836 (1962); T15S, R11E, JL & CG Reveal 727 (1966); T15S, R11E, G Moore 661 (1966); T15S, R11E, Reveal & Davidse 955, Paratype (1967); T15S, R11E, Reveal and Davidse 957, ISOTYPE (1967); T15S, R11E, Reveal 2923 (1972); T16S, R11E, Reveal and Reveal 2925 (1972); T16S, R12E, JL Reveal 4002 (1975); T15S, R11E, Welsh 16270 (1977); T15S, R11E, E Neese 8552 (1979). Emery County: T24S, R6E, E Neese & D Williams 8530 (1979).

Eriogonum loganum A. Nelson
Map 56

Family: Polygonaceae.
Federal designation: endangered, category 2.

Populations of the Logan buckwheat occur at two localities in Cache County, one locality in Morgan County, and two localities in Rich County. The species grows in a mountain shrub–grassland community type on white shale, clay, and gravelly alluvial substrates. Elevational range of the plant is from 4800 to 7000 feet. Recognition of this taxon at species level is questionable. Future taxonomic interpretation may consider it a variety of another species in the complex. This plant was reduced to varietal rank within *E. corymbosum* by Welsh (1984).

Cache County: T12N, R1E, Smith 1704, Type-RM (1909); T12N, R1W, Holmgren and Reveal 2756 (1966); T12N, R1E, Holmgren & Reveal 2757 (1966); T12N, R1E, K Mutz 80-108 (1980); T12N, R2W, K Mutz 80-111 (1980); T12N, R1E, K Thorne 2196 (1982); T12N, R1E, K Mutz 80-108 (1980). Morgan County: T5N, R4E, K Thorne et al. 2755 (1983). Rich County: T9N, R6E, K Thorne 1474 (1981); T12N, R6E, K Snyder 631 (1983).

Eriogonum natum Reveal
Map 57

Family: Polygonaceae.
Federal designation: threatened, category 1.

Occurrences of the terrace buckwheat are restricted entirely to Millard County. Most known localities exist along Highway 50-6 west of Delta. However, the plant has also been collected on the foothills of the Cricket Mountains between Delta and Milford. This rare buckwheat occurs on saline playa remnants in the salt desert shrub community type at 4800 to 5800 feet elevations. This plant was reduced to varietal rank within *E. corymbosum* by Welsh (1984).

Millard County: T20S, R12W, Reveal & Reveal 3924, 3999, 4000 (1975); T22S, R9W, JL Reveal 4612 (1976); T24S, R13W, JL Reveal 4613 (1976); T19S, R11W, SL & SL Welsh 18200 (1978); T20S, R12W, SL & SL Welsh 18202 (1978); T20S, R12W, BF Harrison & KH Thorne 13196 (1979); T23S, R9W, C Fullmer 19 (1981).

Eriogonum smithii Reveal
Map 58

Family: Polygonaceae.
Federal designation: endangered, category 1.

Numerous collections of the Smith buckwheat have been made since the plant was first discovered in 1965, but they have all been from a restricted area near Little and Big Flat Top on the San Rafael desert. The species grows in stabilized red blow sand from the Entrada formation in a desert shrub community type. Elevational range of the plant extends from 4500 to 5500 feet. This plant was treated at varietal rank within *E. corymbosum* by Welsh (1984).

Emery County: T26S, R13E, Smith s.n. (1965); T26S, R13E, NH Holmgren & JL Reveal 3012, Isotype (1966); T26S, R13E, JL Reveal & G Davidse 950, 951 (1967); T26S, R13E, SL Welsh et al. 10891 (1970); T26S, R13E, JL Reveal 2921 (1972); T26S, R13E, SL Welsh et al. (1976); T26S, R13E, Welsh & Clark 16226 (1977); T26S, R13E, K Mutz 81-340,343,346,348 (1981); T26S, R13E, J Tuhy 578 (1982).

Eriogonum soredium Reveal
Map 59

Family: Polygonaceae.
Citation: Great Basin Naturalist 41: 229–231. 1981.
Federal designation: endangered, category 2.

This newly described buckwheat species has been collected in Beaver County near the old mining town of Frisco on privately owned mining claims. It is a low mat-forming species that is rare in occurrence. The plant grows on calcium carbonate deposits in the sagebrush and juniper community type and has a known elevational range of 6600 to 7300 feet.

Beaver County: T27S, R13W, K Ostler & D Anderson 1261 (1978); T26S, R13W, K Ostler & D Anderson 1350 (1978); T27S, R13W, SL Welsh & M Chatterley 19653, Paratype (1980); T27S, R13W, SL Welsh et al. 20192, ISOTYPE (1980).

Festuca dasyclada Hackel.
Map 60

Family: Poaceae.
Federal designation: endangered, category 2.

The sedge fescue was first collected from the state in 1875. Collection data indicates the specimen was taken from somewhere in Emery County, but that population has never been relocated. In 1913 the species was collected on the Manti National Forest in Sanpete County. The plant was not located again in Utah until 1981 and 1982, when a new population was discovered south of Strawberry Reservoir on the Tavaputs Plateau in Wasatch County. Habitat for this population is barrens of the Green River Shale Formation in the sagebrush community. Elevational range extends from 8300 to 9300 feet.

Emery County: Joes Valley, Parry s.n., Isotype-US (1875). Sanpete County: Wagon Road Ridge, JA Willey s.n., Topotype (1913). Wasatch County: T5S, R11W, UBM, S Smith & C Lopez s.n. (1981); T5S, R11W, E Neese 12043 (1982); T5S, R11W UBM, S Goodrich 17303 (1982); T5S, R11W, SL Welsh & E Neese (1982); T5S, R11W UBM, S Goodrich 17795 (1982); T5S, R11W, S Goodrich 17799, 17811 (1982); T5S, R11W UBM, D Atwood 9112 (1982).

Gaillardia flava Rydberg
Map 61

Family: Asteraceae.
Federal designation: threatened, category 2.

The yellow blanket flower occurs on the sandy gravel of alluvial fans and river and stream terraces derived from the Mancos Shale Formation and is associated with *Salix* and *Populus*. Distribution of the species is in western Emery and eastern Grand counties. Elevational range extends from 4200 to 5400 feet.

Emery County: Price River, ME Jones 6412, Isotype (1898); T21S, R16E, Cottam & Hutchings 2176 (1927); T17S, R16E, SL Welsh 14931, 14941 (1977). Grand County: T19S, R16E, Welsh et al. 14735 (1977); T19S, R16E, SL Welsh et al. 14837 (1977); T19S, R16E, SL Welsh 16292 (1977).

Gilia caespitosa Gray
Map 62

Family: Polemoniaceae.
Federal designation: endangered, category 2.

The Rabbit Valley gilia has a distribution restricted to Wayne County. It occurs in the pinyon-juniper community on Navajo Sandstone or on white talus slopes of the Carmel Limestone Formation. Elevational range extends from 5700 to 8500 feet. A collection of the species was made during the 1982 season near Fruita.

Wayne County: Rabbit Valley, Ward s.n., Isotype (1875); T29S, R4E, SL Clark 4 (1964); T29S, R4E, NH Holmgren et al. 2138 (1965); T29S, R7E, K Harrison 1827 (1975); T29S, R4E, SL Welsh & SL Clark 16211 (1977); T29S, R4E, D Atwood 6923 (1978); T29S, R6E, SL & ER Welsh 21176 (1982).

Glaucocarpon suffrutescens (Rollins) Rollins

Map 63

Family: Brassiacaceae.
Federal designation: endangered, category 1.

Known populations of the Rollins thelypody are restricted to Uintah County in the area south of Ouray. Its habitat is a mixed desert shrub community amid scattered pinyon and juniper on the Green River Shale Formation. Elevational range extends from 5400 to 6500 feet. This species is herein regarded as *Schoencrambe suffrutescens* (Rollins) Welsh & Chatterley comb. nov. [based on: *Thelypodium suffrutescens* Rollins in Graham Ann. Carnegie Mus. 26:224. 1937].

Uintah County: T12S, R20E, Graham 895A, Type-GH (1935); T12S, R20E, R Rollins 1700 GH (1937); T12S, R20E, L England 374 (1976); T12S, R20E, SL Welsh et al. 14396 (1976); T11S, R19E, SL Welsh et al. 14399 (1976); T12S, R19E, SL Welsh et al. 14415 (1976); T12S, R20E, SL Welsh 14853 (1977); T11S, R19E, E Neese & JS Peterson 4681 (1978); T12S, R20E, E Neese & JS Peterson 4696 (1978); T12S, R20E, E Neese 4977 (1978); T13S, R20E, L England 1790 (1979); T12S, R20E, RC & KW Rollins 79130 (1979); T12S, R20E, E Neese et al. 11551 (1982); T12S, R20E, R Kass 871 (1982).

Hedysarum occidentale Greene var. *canone* Welsh

Map 64

Family: Fabaceae.
Federal designation: threatened, category 1.

This variety of the western sweetvetch occurs in Carbon and Emery counties. Variance in leaflet features from the main body of the species (which occurs in Washington, Montana, Idaho, Wyoming, Utah, Colorado, and British Columbia) makes the occurrences in Carbon and Emery counties taxonomically significant. The plant occurs in mountain brush, pinyon-juniper, sagebrush, and streamside communities at an elevation extending from 7400 to 8300 feet. The Forest Service has developed a management plan to ensure protection of this variety.

Carbon County: T13S, R12E, Welsh & Christiansen 6614, 6598 (1967); T14S, R14E, Welsh & Murdock 9146 (1969); T14S, R14E; Welsh & Taylor 15075 (1977); T13S, R12E, SL Welsh & K Taylor 15256, Holotype (1977); T13S, R9E, R Foster 8149 (1979); T14S, R14E, S Jennings s.n. (1981). Emery County: T17S, R15E, SL Welsh 14923 (1977); T19S, R6E, ME Lewis 4719 (1977); T16S, R6E, ME Lewis 6607 (1980).

Heterotheca jonesii (Blake) Welsh & Atwood

Map 65

Family: Asteraceae.
Federal designation: endangered, category 2.

The Jones golden aster is known from Springdale near Zion National Park in Washington County and from Hell's Backbone on the Aquarius Plateau in Garfield County. According to the specimens at BRY, no collection of the species has been made from Springdale since the type specimen was taken by Jones in 1894. However, the plant was seen in eastern Washington County by Welsh in 1982. The Garfield County populations, however, have been collected periodically since their discovery in 1942. In 1980 a new population of the species was found at the southern end of Bryce Canyon National Park in Kane County. The species occurs in sandy or gravelly subtrates from limestone outcrops in a ponderosa pine–manzanita community type. Elevation extends from 4000 feet (Jones's type collection) to 9000 feet at Hell's Backbone.

Garfield County: T33S, R3E, WP Cottam 9101 (1942); T33S, R3E, BF Harrison 12343 (1954); T33S, R3E, E Neese & S White 3942 (1977); T33S, R3E, ME Lewis 6124 (1979); T33S, R3E, SL Welsh 19333, 19336 (1979). Kane County: T37S, R3W, R Graybosch 924 (1980). Washington County: T41S, R10W, ME Jones 5249, Type-POM (1894).

Hymenoxys depressa (T. & G.) Welsh & Reveal

Map 66

Family: Asteraceae.
Federal designation: threatened, category 2.

The type of this species was taken by Fremont on his second expedition in the Rocky Mountains, possibly from the Uinta Basin. However, it was not until recently that any collection was reported from there. Most known populations are scattered throughout Emery County, and Fremont could have collected the species when he traversed that area. The literature indicates the plant's distribution extends into Garfield County, but no specimens at BRY corroborate this. During the 1982 field season the species was also discovered south of Duchesne in Duchesne County. Habitat for the species is the pinyon-juniper or mixed desert shrub communities on barren exposures and, often, the rimrock of cliffs. Elevation extends from 4400 to 8400 feet.

DUCHESNE COUNTY: T6S, R4W, UBM, Goodrich & Atwood 16806 (1982). EMERY COUNTY: San Rafael Swell, WD Stanton s.n. (no year); T22S, R13E, BF Harrison 5591 (1931); T19S, R11E, BF Harrison 8128 (1936); T19S, R11E, SL Welsh & ND Atwood 9907 (1970); T19S, R12E, K Despain 240 (1977); T19S, R7E, ME Lewis 4729 (1977); T19S, R7E, S Welsh & S Clark 15417 (1977); T18S, R12E, S Welsh & S Clark 16140, 16165 (1977); T21S, R14E, K Despain 306 (1978); T19S, R12E, K Despain 355 (1978); T19S, R12E, J Harris 126 (1979); T24S, R6E, S White & G Moore 64 (1979); T20S, R10E, K Despain 530, 542 (1979); T21S, R14E, J Harris 409 (1979); T18S, R11E, J Harris 542 (1979); T22S, R6E, BT Welsh 336 (1980); T22S, R6E, BT Welsh 344, 349 (1980); T22S, R13E, JG Harris 712 (1980); T20S, R10E, K Despain 608 (1980); T24S, R13E, J Harris 786 (1980); T26S, R9E, JG Harris 822 (1980); T26S, R9E, J Harris 842 (1980); T26S, R9E, J Harris 864 (1980); T19S, R11E, JG Harris 891 (1980); T26S, R9E, J Harris 920 (1980); T25S, R9E, J Harris 922 (1980); T20S, R11E, J Harris 961 (1980); T22S, R13E, M Williams & D Atwood 80-123-2 (1980); T26S, R8E, JG Harris 979 (1980); T21S, R14E, J & M Harris 1084 (1981); T26S, R9E, Atwood and Goodrich 8652 (1982); T25S, R9E, Atwood and Goodrich 8654 (1982); T22S, R14E, E Neese 13331 (1983). SEVIER COUNTY: T24S, R5E, San Rafael Swell, J Harris 579 (1979).

Hymenoxys helenioides (Rydb.) Cockerell
Map 67

Family: Asteraceae.
Federal designation: threatened, category 2.

Range of distribution for this taxon in Utah includes Emery, Garfield, Sanpete, and Sevier counties. Its habitat is mountain brush, sagebrush, and aspen communities, often in meadows, at 8000 to 10,700 feet elevation. This plant has remained obscure in Utah, partially due, no doubt, to its resemblance to *Helenium hoopesii*, with which it occurs in the aspen communities of central and southern Utah.

EMERY COUNTY: T16S, R7E, RM Thompson s.n. (1980); T16S, R7E, RM Thompson s.n. (1980); T14S, R7E, ME Lewis 6606 (1980). GARFIELD COUNTY: T31S, R5E, Beck & Tanner s.n. (1936); T31S, R5E, K Harrison 1273 (1973); T32S, R5E, E Neese & S White 3635 (1977). SANPETE COUNTY: T18S, R4E, SL Welsh et al. 16130 (1977); T20S, R4E, D Atwood 8049 (1981); T20S, R4E, D Atwood 8050 (1981). SEVIER COUNTY: T21S, R4E, B Albee 4687 (1979); T21S, R4E, E Neese & S White 9287 (1980).

Lepidium barnebyanum Reveal
Map 68

Family: Brassicaceae.
Federal designation: endangered, category 1.

The Barneby peppergrass occurs on the Uinta and Green River Shale formations and is known only from near Duchesne in Duchesne County. Its habitat is mixed desert shrub and pinyon-juniper community and has an elevational range from 6200 to 6500 feet. Several collections of the species from the 1980 season are deposited at BRY, indicating a slight extension beyond the previously known populations.

DUCHESNE COUNTY: T4S, R5W UBM, Ripley & Barneby 8699, Type-WTU (1947); T4S, R5W UBM, NH Holmgren et al. 1759 (1965); T4S, R5W UBM, JL & CG Reveal 848 (1967); T4S, R5W UBM, E Neese and SL Welsh 8909, 8910, 8924, 8926 (1980); T4S, R5W UBM, E Neese & SL Welsh 8962, 8964 (1980); T4S, R5W UBM, D Atwood 7637 (1980).

Lepidium montanum Nutt. in T. & G. var. *neeseae* Welsh & Reveal
Map 69

Family: Brassicaceae.
Federal designation: threatened, category 2.

This tiny variety of *L. montanum* is known from high elevations (9000 feet) only and occurs on Navajo sandstone in the vicinity of Hell's Backbone, north of Escalante in Garfield County. Habitat consists of a ponderosa pine–manzanita community type.

GARFIELD COUNTY: T32S, R3E, E Neese & S White 3332, Holotype (1977); T33S, R3E, E Neese & S White 3944 (1977); T32S, R3E, D Atwood 7616 (1980).

Lepidium montanum Nutt. in T. & G. var. *stellae* Welsh & Reveal
Map 70

Family: Brassicaceae.
Federal designation: endangered, category 2.

This species is known only from one location southeast of Cannonville in Kane County. It occurs on white bare shale knolls among scattered juniper in a blue-grama grassland.

KANE COUNTY: T38S, R2W, JL Reveal et al. 789, Holotype (1967); T38S, R2W, SL & SL Welsh 12841, Holotype (1975); T38S, R2W, D Atwood 7201 (1979).

Lepidium ostleri Welsh & Goodrich
Map 71

Family: Brassicaceae.
Original citation: Great Basin Naturalist 40: 80. 1980.
Federal designation: endangered, category 1.

The Ostler lepidium is a rare and endemic Utah plant known only from the San Francisco Mountains, near Frisco, in Beaver

County, where it occurs in a severely restricted distribution on private mining claims. Known elevational range of the species is from 5800 to 6900 feet. The plant grows on gravelly limestone slopes. It has been collected, at its lowest elevation, within a shadscale community type, but its largest population occurs in a pinyon-juniper community.

Beaver County: T27S, R13W, K Ostler & D Anderson 1210 (1978); T27S, R13W, K Ostler & D Anderson 1258, Holotype (1978); T27S, R13W, K Ostler 1415, Paratype (1978); T27S, R13W, K Ostler 1588, Paratype (1978); T27S, R13W, J Anderson s.n. (1980); T27S, R13W, SL Welsh & M Chatterley 19654, 19655 (1980).

Lesquerella tumulosa (Barneby) Reveal

Map 72

Family: Brassicaceae.
Federal designation: endangered, category 1.

The Kodachrome twinpod has a known distribution restricted to Kane County, just south of Cannonville. Its habitat is white shale outcrops derived from the Winsor Member of the Carmel Formation, among scattered junipers. Elevational range extends from 5500 to 5870 feet.

Kane County: T38S, R2W, Barneby 14424, Type-NY (1966); T38S, R2W, JL Reveal et al. 788 (1967); T38S, R2W, SL Welsh 12765, 12840 (1975); T38S, R2W, JL & CG Reveal 4452 (1976); T38S, R2W, R Foster 3740 (1977); T38S, R2W, D Atwood 7203 (1979); T38S, R2W, K Mutz & A Hreha 81-93 and 81-94 (1981).

Lomatium latilobum (Rydb.) Mathias

Map 73

Family: Apiaceae.
Federal designation: threatened, category 2.

The broad-leaved biscuitroot occurs in Arches National Monument in Grand County and a few miles south of Moab in San Juan County. Recent reports of the species from Colorado indicate a broader range. It grows in crevices and sandy soil of the Entrada sandstone formation among scattered pinyon-juniper and desert shrubs. Elevational range extends from 4800 to 5000 feet.

Grand County: T26S, R23E, Rydberg & Garrett 8371, Type-NY (no date); T24S, R22E, BF Harrison 11133 (1947); T24S, R21E, BF Harrison 11137 (1947); T23S, R21E, BF Harrison 11142 (1949); T23S, R21E, Holmgren et al. (1955); T23S, R21E, Barnett, Pitts, and Pyrah 51 (1963); T23S, R21E, Allan 10, 69, 350 (1972); T23S, R21E, Allan 494 (1974); T26S, R23E, D Atwood, B Thompson 8785 (1982). San Juan County: T27S, R22E, SL Welsh 20841 (1981).

Mentzelia argillosa Darlington

Map 74

Family: Loasaceae.
Federal designation: none.
UNPS recommendation: threatened, category 2.

This species is known only from Sanpete and Sevier counties in Utah. However, it has also been reported from Garfield County, Colorado. It is endemic to the Arapien shale formation and grows in shadscale, ephedra, juniper, buckwheat, greasewood, and desert shrub communities at 5600 to 6200 feet elevation. More information needs to be accumulated concerning the plant's distribution in Utah.

Sanpete County: T19S, R2E, SL Welsh, G Moore 3381 (1964); T19S, R2E, S Goodrich, ME Lewis 17439 (1982). Sevier County: T22S, R1W, DW Lindsay s.n. (1962); T22S, R1W, SL Welsh, ND Atwood 11724 (1972); T22S, R1W, D Williamson 40 (1976); T23S, R1W, L Greenwood s.n. (1979); T23S, R1W, L Greenwood s.n. (1979); T23S, R1W, L Greenwood s.n. (1979).

Najas caespitosus (Maguire) Reveal

Map 75

Family: Najadaceae.
Federal designation: threatened, category 2, possibly extinct.

The Fish Lake naiad is known only from near Pelican Point at Fish Lake in Sevier County. This rare species is known only from the type locality where it was collected in 1940 by Bassett Maguire. It occurs in an aquatic habitat in shallow water to one foot deep with a sand-gravel bottom. Elevational range is approximately 8600 feet.

Sevier County: T26S, R2E, B Maguire 19888, Isotype (1940).

Oenothera acutissima Wagner

Map 76

Family: Onagraceae.
Citation: Syst. Bot. 6(2): 153–155. 1980.
Federal designation: threatened, category 2.

This recently named and rare species of yellow-flowered evening-primrose occurs in Uintah and Daggett counties in Utah and in Moffat County, Colorado. It was first collected in Moffat County in 1966. The first Utah population was discovered in 1978 (see below). *O. acutissima* is related to *O. flava* but is distinguished by its long, slender, branching taproot and its linear, irregularly dentate leaves. It grows in moist, sandy soils and occasionally on rock outcrops in meadow, sagebrush, ponderosa pine, and streambed communities. Elevation ranges from 7000 to 7800 feet. The plant occurs in several small and scattered populations.

Daggett County: T2N, R22E, JS Peterson 1293, Paratype (1978); T2N, R22E, E Neese, JS Peterson 5428, Isotype (1978); T2N, R22E, JS Peterson, G Kruzel 1566 (1980); T2N, R22E, E Neese 12016 (1982). Uintah County: T1S, R24E, E Neese 5715 (1978); T1S, R24E, E Neese 5697 (1978); T4S, R25E, E Neese, K Snyder 11767 (1982); T4S, R25E, E Neese, K Snyder 11912 (1982); T4S, R25E, F Smith et al. 1702 (1982).

Pediocactus despainii Welsh & Goodrich
Map 77

Family: Cactaceae.
Original citation: Great Basin Naturalist 40: 83. 1980.
Federal designation: endangered, category 2.

Known distribution of the Despain pediocactus is restricted to a small portion of the San Rafael Swell in Emery County. Habitat for this diminutive cactus species is open areas of pinyon-juniper on the exposed Carmel Limestone Formation. Elevational range extends from 6000 to 6200 feet. The population is subject to threat from off-road vehicles, primarily, as well as from trampling by grazing animals.

Emery County: T20S, R10E, K Despain 266 (1978); T19S, R10E, K Despain 266a, Holotype (1978); desert, K Heil 1002, NCC-S (1979); T19S, R10E, E Neese & K Thorne 504 (1979); T19S, R10E, K Despain 445, Paratype (1979); T19S, R10E, JG Harris 670 (1980).

Pediocactus winkleri Heil
Map 78

Family: Cactaceae.
Original Citation: Cact. & Succ. J. (U.S.) 51: 28. 1979.
Federal designation: endangered, category 2.

The Winkler pediocactus is known only from near Notom in Wayne County, where it was first discovered in 1978. Common vegetation associated with the habitat area is of the salt desert shrub community. Mat-atriplex is a particular dominant. Soil is high in clay content. Elevational range extends from 4800 to 5400 feet. Additional habitat for this species exists, but the plant has not been extensively searched for. Further field work is necessary to more accurately determine its range.

Wayne County: T30S, R7E, K Heil (1978); T30S, R7E, K Heil 989, NCC-S (1979); T29S, R8E, Neese et al. 7195 (1979); T29S, R8E, E Neese 8732 (1980); T29S, R7E, E Neese & K Mutz 11425 (1982).

Penstemon atwoodii Welsh
Map 79

Family: Scrophulariaceae.
Federal designation: threatened, category 2.

The Atwood beardtongue is known from southern Garfield County and north central Kane County. Habitat for the species is ponderosa pine and pinyon-juniper woodlands, where it grows in grayish sand and clay loam of the Kaiparowits, Wahweap, and Straight Cliffs formations. Elevational range extends from 6200 to 8000 feet.

Garfield County: T35S, R2E, Cottam 4418 (1929); T37S, R1E, Atwood 5177, Paratype (1973); T37S, R1E, Welsh & Murdock 12867, Paratype (1975); T37S, R3E, NH & PK Holmgren 8446 (1977). Kane County: T38S, R3E, Atwood s.n., Paratype (1969); T38S, R1W, ND Atwood 5165 (1973); T39S, R4E, ND Atwood 5207 (1973); T39S, R4E, Welsh & Murdock 12793, 12793a, Paratype (1975); T38S, R2W, Welsh & Welsh 12800, Holotype (1975); T38S, R2E, R & D Foster 4107 (1977).

Penstemon bracteatus Keck
Map 80

Family: Scrophulariaceae.
Federal designation: threatened, category 1.

The Red Canyon beardtongue occurs on the limestone slides and gravelly soils of Red Canyon in the Bryce Canyon area of Garfield County. The Pink Limestone Member of the Wasatch Formation supports this, as well as other, rare and indigenous Utah plants. A mixed ponderosa pine and pinyon pine community type is associated with the species. Elevational range extends from 6900 to 8300 feet.

Garfield County: T37S, R3W, Weight B-32, UT (1932); T35S, R4½W, Pennell & Schaeffer, UC,UT,UTC (1938); T35S, R4½W, B Maguire 19080 (1940); T37S, R4W, NH Holmgren et al. 2018 (1965); T35S, R4½W, JL & CG Reveal 4468 (1976); T36S, R4W, NH & PK Holmgren 8452 (1977); T37S, R4W, R & D Foster 4389 (1977); T37S, R4W, R Graybosch 791b (1980); T37S, R4W, D Atwood 7620 (1980); T35S, R4½W, D Atwood 7626 (1980); T36S, R4½W, D Atwood 7922 (1981).

Penstemon compactus (Keck) Crosswhite
Map 81

Family: Scrophulariaceae.
Federal designation: threatened, category 2.

Distribution for the Cache beardtongue is limited to Cache County. The majority of collections have come from near Tony Grove Lake and Mt. Naomi. However, other populations have been found in Logan Canyon, Franklin Basin, and near Mt. Magog and Wellsville Peak. Habitat for the plant is rocky outcrops in spruce-fir and aspen community types. Elevational range extends from 6700 to 9500 feet.

Cache County: T11N, R2W, S Flowers 219, UT (1924); T14N, R3E, S Flowers 703, UT (1928); T14N, R3E, Maguire & Hobson s.n., UTC (1936); T14N, R3E, Maguire & Hobson 14054 (1936); T13N, R3E, Maguire 16134, UTC (1938); T14N, R2E, Maguire 16148, Type-UTC (1938); T13N, R2E, Holmgren 3591 (1944); T13N, R2E, Tillett & Crockett 206, UTC (1953); T13N, R2E, Clark 320 (1965); T14N, R3E, AC Hull s.n., UTC (1970); T13N, R3E, NH & PK Holmgren 8501 (1977); T13N, R3E, KH & JP Thorne 2153 (1982); T13N, R2E, B Neely 389 (1981); T14N, R3E, B Neely 468 (1981).

Penstemon concinnus Keck

Map 82

Family: Scrophulariaceae.
Federal designation: threatened, category 2.

All collections of this taxon are from Beaver County, Utah, except for one specimen from Pine Valley in Iron County, the type from Tunnel Springs in Millard County, and two specimens from the Mountain Home Range, also in Millard County. This unique beardtongue grows from 6240 to 7500 feet elevation in pinyon-juniper, sagebrush, rabbitbrush, blue-grama grass, and mountain mahogany associations. Substrate ecology includes gravelly bluffs, alluvial outwash, limestone outcrops, dolomite, and ryholite. Several populations of this species exist, but they occur within a restricted range.

Beaver County: T26S, R19W, SL Welsh, G Moore 3199 (1964); T30S, R19W, SL Welsh et al. 13276 (1976); T30S, R19W, K Ostler, D Anderson 1181, 1200 (1978); T27S, R18W, K Ostler, D Anderson 1247 (1978); T29S, R15W, K Ostler, D Anderson 1303 (1978); T28S, R19W, K Ostler, D Anderson 1315 (1978); T28S, R19W, K Ostler, D Anderson 1314 (1978); T28S, R18W, K Ostler, D Anderson 1352 (1978); T26S, R19W, K Ostler 1438 (1978); T26S, R19W, K Ostler 1440 (1978); T30S, R16W, K Ostler 1461 (1978); T30S, R15W, K Ostler 1472 (1978); T29S, R19W, SL Welsh, M Chatterley 19556 (1980); T29S, R19W, SL Welsh, M Chatterley 19688 (1980); T29S, R15W, K Thorne, B Welsh 1529 (1981); T29S, R15W, K Thorne, B Welsh 1535 (1981); T30S, R15W, B Welsh, K Thorne 1294 (1981); T30S, R15W, B Welsh, K Thorne 1296 (1981). Iron County: T31S, R17W, K Ostler, D Anderson 1398 (1978). Millard County: T24S, R17W, Cottam 5635 Type-DS (1938); T26S, R19W, SL Welsh, M Chatterley 19734 (1980); T25S, R19W, SL Welsh, M Chatterley 19742 (1980).

Penstemon goodrichii N. Holmgren

Map 83

Family: Scrophulariaceae.
Federal designation: threatened, category 2.

The Goodrich beardtongue is known only from the Uinta Basin, primarily in Uintah County. One collection of the plant comes from Duchesne County. Habitat of the species includes clay soils of the Duchesne River Formation in pinyon-juniper, sagebrush, shadscale and fourwing saltbush communities. Elevation ranges from 5600 to 6200 feet.

Duchesne County: T1N, R2W UBM, E Neese 7710 (1979). Uintah County: T4S, R20E, S Goodrich 5917 (1976); T1N, R1E UBM, S Goodrich 5896 (1976); T1N, R1E UBM, S Goodrich 5364 (1976); T1N, R1E UBM, S Goodrich 5392 (1976); T5S, R19E, NH & PK Holmgren, RC Barneby 8760, Type (1978); T1N, R1E UBM, E Neese, JS Peterson 5802 (1978); T5S, R20E, E Neese, JS Peterson 5822 (1978); T1N, R1E UBM, S Goodrich 11712 (1978); T1N, R1E UBM, E Neese 7694 (1979); T1N, R1E UBM, D Atwood 7561 (1980); T1N, R1E, S Goodrich 16773 (1982); T1N, R1E UBM, E Neese 14128 (1983).

Penstemon grahamii Keck

Map 84

Family: Scrophulariaceae.
Federal designation: threatened, category 1.

The Graham beardtongue is known only from Uintah County and from one location in Carbon County south of Sand Wash near the Uintah County line. During the 1982 field season, several new populations of this species were discovered in the southeastern portion of Uintah County. Prior known localities were restricted to the southwestern part of the county. Habitat for the species is white outcrops of Green River Shale in the pinyon-juniper and mixed desert shrub communities. Elevational range extends from 5700 to 6500 feet.

Uintah County: T12S, R18E, Graham 7883, Type-CM (1933); T13S, R22E, Holmgren et al. 1845 (1965); T11S, R17E, E Neese 4496 (1978); T12S, R21E, E Neese & S Peterson 4734 (1978); T12S, R18E, E Neese 5249 (1978); T13S, R20E, L England 1780 (1979); T12S, R23E, K Thorne & B Neely 1761 (1982); T12S, R24E, K Thorne & B Neely 1796 (1982); T11S, R25E, E Neese & C Fullmer 11483 (1982); T12S, R24E, F Smith & K Snyder 1611 (1982); T12S, R24E, F Smith & K Snyder 1615 (1982); T12S, R25E, K Thorne, B Neely, C Fullmer 1826 (1982); T12S, R25E, Kass & Trent 839 (1982); T12S, R25E, Kass & Trent 844 (1982); T11S, R25E, E Neese & C Fullmer 11478 (1982); T11S, R25E, E Neese & C Fullmer 11488, 11500 (1982); T12S, R25E, K Thorne 1894

(1982); T11S, R25E, E Neese & C Fullmer 11682 (1982); T10S, R25E, E Neese, C Fullmer 11673 (1982); T10S, R25Ed, E Neese, C Fullmer, W Rogers 12056 (1982); T10S, R25E, E Neese & F Smith 12055 (1982); T12S, R25E, E Neese & J Trent 12363 (1982).

Penstemon leptanthus Pennell

Map 85

Family: Scrophulariaceae.
Federal designation: endangered, category 2.

The only BRY record of this beardtongue from the state was collected by Mont Lewis in 1978. That population is in lower Dry Canyon of the Manti-La Sal National Forest in Sanpete County. Pennell states that the type (deposited US) was collected in central Utah by L. F. Ward in 1875 and that it was probably part of Ward's no. 280, collected at Twelve Mile Creek Canyon near Mayfield, although it bears the label of Ward 546 from The Button, Aquarius Plateau. It was originally distributed by Ward as *P. acuminatus*. Elevation of the species is approximately 6200 feet. It occurs in the pinyon-juniper community.

Sanpete County: T16S, R2E, ME Lewis 5439.

Penstemon nanus Keck

Map 86

Family: Scrophulariaceae.
Federal designation: threatened, category 2.

The low beardtongue is known primarily from Millard County, where it occurs in appropriate habitat areas of Pine Valley and the Cricket Mountains. It is also known from Beaver County, where it occurs in Pine Valley and on the Wah Wah Mountains. Habitat for this small beardtongue is calcareous gravel of the Sevy Dolomite Formation in a pinyon and mixed desert shrub community type. Elevation extends from 5400 to 6400 feet.

Beaver County: T26S, R15W, ND Atwood 1510 (1968); T26S, R15W, SL Welsh et al. 13325 (1976); T26S, R15W, K Ostler & D Anderson 1176 (1978); T28S, R16W, K Ostler & D Anderson 1135 (1978); T28S, R16W, K Ostler & D Anderson 1254 (1978); T26S, R15W, K Ostler & D Anderson 1255 (1978); T27S, R16W, K Ostler & D Anderson 1266 (1978); T27S, R15W, K Ostler & D Anderson 1320 (1978); T28S, R17W, K Ostler & D Anderson 1353 (1978); T26S, R15W, SL Welsh & M Chatterley 19527 (1980); T28S, R16W, SL Welsh & M Chatterley 19541 (1980); T28S, R16W, SL Welsh & M Chatterley 19535 (1980); T26S, R15W, SL Welsh & M Chatterley 19569 (1980); T26S, R15W, SL Welsh & M Chatterley 19711 (1980); T27S, R16W, SL Welsh & M Chatterley 19733 (1980); T26S, R18W, S Goodrich 18654 (1983). Millard County: T24S, R17W, MG Barlow 50 (1964); T24S, R17W, MG Barlow 52-a (1964); T24S, R17W, NH Holmgren et al. 2576 (1966); T24S, R17W, SL Welsh et al. 13303 (1976); T25S, R18W, K Ostler & D Anderson 1228 (1978); T21S, R9W, SL Welsh & E Neese 18762 (1979); T25S, R17W, SL Welsh & M Chatterley 19498 (1980); T23S, R15W, SL Welsh & M Chatterley 19508 (1980); T24S, R15W, SL Welsh & M Chatterley 19517 (1980); T25S, R18W, SL Welsh & M Chatterley 19572 (1980); T22S, R16W, C Fullmer 10 (1980); T23S, R14W, SL Welsh & M Chatterley 19663 (1980); T23S, R14W, SL Welsh 20538 (1981); T25S, R18W, S Goodrich 18395 (1983).

Penstemon parvus Pennell

Map 87

Family: Scrophulariaceae.
Federal designation: none.
UNPS recommendation: category 2.

This species of beardtongue is known only from the Aquarius Plateau in Garfield County and from Parker Mountain in Piute County. It grows at an elevation of 8500 to 9800 feet in clay soil and sandy gravels of the sagebrush-grass community. More information needs to be gathered to establish an accurate picture of the distribution and ecological needs of this plant.

Garfield County: T33S, R2E, DE Beck 8900 (1938); T33S, R2E, DE Beck s.n. (1938); T31S, R2E, NH Holmgren et al. 2257 (1965); T31S, R2E, E Neese, S White 3287 (1977); T31S, R2E, NH & PK Holmgren 8583 (1977); T31S, R2E, E Neese, S White 3582 (1977); T32S, R2E, D Atwood, B Thompson 7655 (1980). Piute County: T29S, R1W, SL Welsh et al. 14173 (1976).

Penstemon scariosus Pennell var. *albifluvis* (England) N. Holmgren

Map 88

Family: Scrophulariaceae.
Federal designation: threatened, category 1.

This new combination, based on *Penstemon albifluvis* England, recognizes the taxon as a variety of *P. scariosus*. It is distinguished from varieties *scariosus* and *garrettii* by its slightly larger anther-cells, lavendar to pale blue flower color, and geographical distribution. It occurs in west central Uintah County and adjacent Rio Blanco County, Colorado. The plant grows on shale slopes of the Evacuation Creek and Parachute Creek members of the Green River Shale Formation in pinyon juniper, mountain mahogany, and mixed desert shrub communities. Elevation ranges from 4975 to 6800 feet. It is questionable as to whether this variety should be considered a candidate for listing.

Uintah County: T11S, R24E, LC Higgins 1579, 1604 (1968); T10S, R25E, A Cronquist 11462 (1976); T10S, R24E, JL England 2046 (1980); T10S, R25E, E Neese, C Fullmer 11456 (1982); T10S, R24E, SL Welsh 19607 (1980); T10S, R24E, K Thorne, B Neely 1833 (1982); T9S, R25E, E Neese, J Trent 12353 (1982); T10S, R25E, F Smith, K Snyder 2097 (1982); T9S, R25E, F Smith, E Neese 1646 (1982); T11S, R25E, F Smith, K Snyder 1851 (1982); T10S, R25E, B Neely, K Thorne 839 (1982); T12S, R25E, F Smith, K Snyder 1610 (1982); T11S, R25E, E Neese, C Fullmer 11471 (1982); T12S, R22E, E Neese 11539 (1982); T12S, R22E, K Thorne 1855 (1982); T12S, R22E, F Smith, K Snyder 1631 (1982); T12S, R23E, K Thorne, B Neely 1801 (1982); T11S, R25E, E Neese, C Fullmer 11486 (1982); T11S, R25E, E Neese, et al. 11660 (1982); T11S, R25E, E Neese 11667 (1982); T13S, R23E, K Thorne, B Neely 1913 (1982); T11S, R25E, R Kass, J Trent 904 (1982); T11S, R25E, E Neese 11664 (1982); T11S, R25E, F Smith, J Trent 1786 (1982); T11S, R25E, F Smith, J Trent 1791, 1792 (1982); T11S, R25E, E Neese, J Trent 12047 (1982); T11S, R25E, F Smith, J Trent 1796 (1982); T11S, R25E, F Smith, K Snyder 2089 (1982); T11S, R25E, E Neese 12378 (1982); T11S, R25E, F Smith, K Snyder 2109 (1982); T11S, R25E, E Neese, J Trent 12358 (1982).

Penstemon tidestromii Pennell

Map 89

Family: Scrophulariaceae.
Federal designation: threatened, category 2.

The Tidestrom beardtongue is known only from the San Pitch Mountains in Sanpete County and from one location south of Levan in southeastern Juab County. The plant occurs in desert shrub, sagebrush, snowberry, and juniper community types and on a variety of substrates. Elevational range extends from 5600 to 8200 feet.

Juab County: T15S, R1E, SL Welsh et al. 14817 (1977). Sanpete County: T17S, R1E, Tidestrom 1296 (1908); T17S, R1E, L Greenwood s.n. (1978); T17S, R2E, L Greenwood s.n. (1978); T17S, R1E, L Greenwood s.n. (1979); T17S, R1E, L Greenwood s.n. (1979); T19S, R2E, L Greenwood 4950 (1980); T18S, R2E, ME Lewis 6981 (1982).

Penstemon wardii Gray

Map 90

Family: Scrophulariaceae.
Federal designation: threatened, category 2.

The Ward beardtongue is known from Sanpete County south of Manti and west of Centerfield and from a wider range within Sevier County. Habitat for the species is clay shale hills of the Arapien, Bald Knoll, and Colton formations in pinyon-juniper and greasewood communities. Elevational range is from 5250 to 6800 feet.

Sanpete County: T18S, R2E, D Atwood 1521 (1968); T19S, R1W, L Greenwood s.n. (1978). Sevier County: T23S, R1½W, Ward 162, Type-US (1875); T22S, R1E, NH Holmgren et al. 1968 (1965); T23S, R1W, SL Welsh & D Atwood 11720 (1972); T23S, R1W, SL Welsh 12801 (1975); T23S, R3W, D Williamson 36 (1976); T22S, R1W, D Williamson 38 (1976); T21S, R2W, SL Welsh et al. 16931 (1978); T25S, R4W, Greenwood (1979); T21S, R1E, L Greenwood (1979); T25S, R4W, L Greenwood (1979); T23S, R3W, L Greenwood (1979); T23S, R3W, L Greenwood (1979).

Phacelia indecora J.T. Howell

Map 91

Family: Hydrophyllaceae.
Federal designation: endangered, category 2.

The drab scorpion plant is known from three geographically separate localities, one from near Bluff in San Juan County, one from an area west of Hanksville in Wayne County, and the other from Castle Valley in Emery County. The plant occurs in salt desert shrub and blackbrush communities on clay and basalt hills. Elevational range of the species extends from 4400 to 5500 feet.

Emery County: T19S, R9E, JG Harris 269 (1979). San Juan County: T40S, R21E, ME Jones, Type-CAS (1919). Wayne County: T28S, R9E, ND Atwood 1363 (1968).

Primula maguirei L.O. Williams

Map 92

Family: Primulaceae.
Federal designation: threatened, category 1.

Populations of the Maguire primrose are restricted to Logan Canyon in upper Cache County. This primrose is a remarkably beautiful species growing on damp overhanging rocks and in crevices. It occurs in the montane shrub, mixed aspen, and conifer communities. Elevational range extends from 4800 to 5500 feet.

Cache County: T12N, R1E, Aldous & Owen s.n., UTC (1911); T12N, R2E, Maguire & Maguire 3650, Type-MO (1932); T12N, R1E, Berber 3650a, UTC (1932); T12N, R1E, Burke 3651, UTC (1932); T12N, R2E, Muencher & Maguire 2399, UTC (1933); T12N, R2E, Williams 2149, MO (1935); T12N, R1E, A Cronquist 433-37 (1937); T12N, R1E, L & J Shultz 2436 (1978).

Psoralea epipsila Barneby

Map 93

Family: Fabaceae.
Federal designation: endangered, category 2.

The Kane breadroot is known only from southern Kane County a few miles east of Kanab and just across the Arizona border in Mohave County. It occurs in clay soil of the Chinle and Moenkopi formations in either mixed desert shrub, sagebrush, or juniper communities. Elevational range of the plant extends from 4000 to 5200 feet.

KANE COUNTY: T43S, R3W, Ripley & Barneby 4832, Type-CAS (1943); T43S, R4W, ND Atwood 2668 (1971); T43S, R4W, RK Giersch 4380 (1978).

Psoralea pariensis Welsh & Atwood
Map 94

Family: Fabaceae.
Federal designation: threatened, category 1.

The Paria breadroot is known only from Bryce Canyon National Park in Garfield County and from No Man's Mesa and Cottonwood Wash in central Kane County. Habitat for the species is a ponderosa pine woodland community, with substrate of alluvial materials derived from the Wasatch Limestone Formation. Elevation extends from 5600 to 8000 feet.

GARFIELD COUNTY: T37S, R4W, H Buchanan 1494 Paratype (1970); T37S, R4W, Welsh & Welsh 12810, Paratype (1975); T37S, R4W, Murdock (1975); T37S, R4W, Welsh & Murdock 12859, Holotype (1975); T37S, R4W, JR Murdock s.n. (1975). KANE COUNTY: T40S, R1W, Atwood 3684 (1972); T40S, R3W, D Atwood 6782 (1976).

Psorothamnus polyadenius (Torr.) Rydb. var. *jonesii* Barneby
Map 95

Family: Fabaceae.
Original citation: Mem. New York Bot. Gard. 27: 52. 1977.
Federal designation: endangered, category 2.

The Jones indigo bush is known from only two localities in Emery County, one at the south base of Mexican Mountain and the other near the airport west of Greenriver. It occurs in a salt desert shrub community dominated by ephedra and shadscale on clay hills covered with a pedimental gravel. Elevation is approximately 4700 feet.

EMERY COUNTY: T22S, R15E, D Atwood & B Thompson 7579 (1980); T21S, R13E, JG Harris 976 (1980); T21S, R15E, B Welsh & M Chatterley 738 (1981).

Ranunculus acriformis Gray var. *aestivalis* L. Benson
Map 96

Family: Ranunculaceae.
Federal designation: endangered, category 2.

The type locality of the autumn buttercup is a few miles north of Panguitch in Garfield County, where Lyman Benson collected the plant in 1948. That population has been relocated only recently by Kathy Mutz. However, the plant, belonging to *R. acriformis*, but not the var. *aestivalis*, was collected near Muddy Creek in Sanpete County during the 1982 season, and var. *aestivalis* was found by Kathy Mutz in the Sevier River Valley in Garfield County in 1982 and 1983. It occurs in a meadow community. Elevation of the type and Garfield County populations was approximately 6400 feet. The Muddy Creek population occurs at an elevation of approximately 9700 feet.

GARFIELD COUNTY: T34S, R5W, L Benson 13420, Isotype (1948); T33S, R5W, K Mutz 1025 (1982); T33S, R5W, K Mutz 7 (1983). SANPETE COUNTY: T20S, R5E, ME Lewis 7369 (1982).

Sclerocactus pubispinus (Engelm.) L. Benson
Map 97

Family: Cactaceae.
Federal designation: category 3C.
UNPS recommendation: category 2.

The Great Basin fishhook cactus is a pretty barrel cactus that is widespread in Utah and Nevada. It is known from Beaver, Juab, Millard, Sevier, and Tooele counties in Utah, and Elko and White Pine counties in Nevada. However, the species is never abundant at any one location, and it is evident that it is affected by even minor fluctuations of the ecosystem. Habitat for the species is rocky hillsides and ancient shoreline terraces of calcareous or dolomitic gravels and a mixed desert shrub community. Elevation ranges from 5000 to 6440 feet.

BEAVER COUNTY: T27S, R13W, K Ostler & D Anderson 1265 (1978); T27S, R18W, SL Welsh & M Chatterley 19550 (1980); T27S, R16W, SL Welsh & M Chatterley 19533 (1980); T26S, R20W, SL Welsh & M Chatterley 19562 (1980); T26S, R15W, SL Welsh, M Chatterley (1980); T26S, R15W, SL Welsh & M Chatterley 19713 (1980); T27S, R16W, SL Welsh & M Chatterley 19729 (1980); T28S, R11W, B Welsh & K Thorne 1301 (1981). JUAB COUNTY: T13S, R19W, SL Welsh et al. 16807 (1978). MILLARD COUNTY: T26S, R20W, K Ostler & D Anderson 1304 (1978); T22S, R15W, SL Welsh & M Chatterley 19504 (1980); T24S, R16W, SL Welsh & M Chatterley 19516 (1980); T24S, R14W, SL Welsh & M Chatterley (1980); T21S, R16W, C Fullmer 8 (1980); T25S, R18W, SL Welsh & M Chatterley 19576 (1980); T24S, R14W, SL Welsh & M Chatterley 19641 (1980); T22S, R15W, SL Welsh & M Chatterley 19686 (1980); T25S, R19W, SL Welsh & M Chatterley 19740 (1980);

T15S, R12W, R Kass & J Herrick 349 (1981); T23S, R17W, S Goodrich 18711 (1983). Sevier County: T25S, R3W, S Welsh 16485 (1978); T25S, R4W, S Welsh 16526 (1978); T25S, R4W, E Neese & D Williams 7148 (1979). Tooele County: T8S, R18W, S Welsh et al. 16854 (1978).

Selaginella utahensis Flowers
Map 98

Family: Selaginellaceae.
Federal designation: threatened, category 2.

The type of this species was collected by Cottam in Zion National Park in 1931. A second collection was made by him approximately 16 miles north of St. George in 1941. Since that time no observations of the plant have been reported in Utah until 1982, when the taxon was collected again in Zion National Park. Habitats of the 1931 and 1941 collections include wash bottoms and shady slopes, respectively. The 1982 collections are from populations growing on the Navajo sandstone formation in the ponderosa pine community type. Elevation ranges from 4000 to 7500 feet. Intermountain Flora reports that this species also occurs on the Charleston Mountains in southern Nevada.

Washington County: T41S, R10W, Cottam 5644, Type (1931); ca T40S, R15W, Cottam 8817 (1941); T41S, R10W, R Kass et al. 1093 (1982); T41S, R10W, SL Welsh 21385 (1982).

Senecio dimorphophyllus Greene var. *intermedius* T.M. Barkley
Map 99

Family: Asteraceae.
Federal designation: threatened, category 2.

Until recently the intermediate groundsel was only known from the La Sal Mountains in San Juan County, where it occurred in swampy areas of high alpine or subalpine meadows. However, in 1982 the plant was collected by Sherel Goodrich and Mont Lewis near the town of Ferron in Sanpete County. Additional fieldwork needs to be conducted to understand the ecological needs affecting range and distribution of this taxon. Elevational range of the species extends from 9,200 to 10,500 feet.

San Juan County: T27S, R24E, Payson & Payson 4097, Type-MO (no date); T27S, R24E, B Thompson 18 (1976); T27S, R24E, ND Atwood 7079 (1978). Sanpete County: T20S, R4E, S Goodrich, ME Lewis 17428 (1982).

Silene petersonii Maguire var. *minor* Hitchc. & Maguire
Map 100

Family: Caryophyllaceae.
Federal designation: threatened, category 1.

The Red Canyon catchfly occurs only on the pink limestone member of the Wasatch formation. Populations exist on this formation in Red Canyon in Garfield County and near Cedar Breaks National Monument in Iron County. Mixed ponderosa pine, fir, and western bristlecone pine community types are associated with the occurrence of this species. Elevational range of the plant extends from 7,000 to 10,400 feet.

Garfield County: T35S, R4½W, Maguire 19550, Type-UTC (1940); T35S, R6W, R & D Foster 4758 (1978); T35S, R4W, LC Higgins 10829 (1977). Iron County: T36S, R9W, BF Harrison & A Carter 9860 (1940); T36S, R9W, LC Higgins 11217 (1977); T36S, R9W, D Atwood & B Thompson 7672 (1980); T36S, R9W, R Graybosch 933 (1980).

Silene petersonii Maguire var. *petersonii*
Map 101

Family: Caryophyllaceae.
Federal designation: threatened, category 2.

Most historical reports of the plateau catchfly have been from southeastern Sanpete County, near Skyline Drive on the Manti-La Sal National Forest. However, during the 1981 field season, occurrences of the plant were also observed on the Escalante Mountains, east of Widtsoe, in Garfield County. Rabbitbrush, scattered spruce, subalpine meadows, or conifer community types are all possible habitat for the species. However, substrate usually consists of white limestone gravel and talus slopes belonging to the Flagstaff Formation. Elevational range extends from 9,700 to 11,200 feet.

Garfield County: T34S, R1W, D Atwood 8162 (1981); T34S, R1W, D Atwood 8173 (1981). Sanpete County: T19S, R4E, Maguire 20000, Type-UTC (1940); T19S, R4E, NH Holmgren & JL Reveal 1497 (1964); T19S, R4E, ME Lewis & R Thompson 4241 (1976); T19S, R4E, ME Lewis 4306 (1976); T19S, R4E, S Welsh & S Clark 15382 (1977); T19S, R4E, SL & BJ Welsh 15396 (1977); T18S, R4E, E Neese & S White 3707 (1977); T19S, R4E, E Neese & S White 3714 (1977); T19S, R4E, S Clark 2880 (1977); T17S, R5E, S Clark 3192 (1977); T19S, R4E, D Atwood 7990 (1981); T19S, R4E, D Atwood 7999 (1981); T20S, R4E, D Atwood 8133 (1981); T19S, R4E, D Atwood 8142 (1981).

Sphaeralcea caespitosa Jones
Map 102

Family: Malvaceae.
Federal designation: threatened, category 2.

The Jones globemallow is a low, showy species restricted to limestone and dolomite outcrops and is known only from western Millard and Beaver counties. Habitat includes mixed shrub, pinyon-juniper, and grass community types. Elevational range of the plant extends from 5000 to 6500 feet. Recent fieldwork has indicated that the species is somewhat widespread, but never common.

Beaver County: T26S, R15W, ME Jones s.n., Type-POM (1906); T27S, R16W, K. Ostler & D Anderson 1267, 1270 (1978); T26S, R16W, K Ostler & D Anderson 1321 (1978); T27S, R16W, SL Welsh & M Chatterley 19530 (1980); T26S, R16W, SL Welsh & M Chatterley 19716 (1980); T27S, R16W, SL Welsh & M Chatterley 19732 (1980). Millard County: West Desert, WP Cottam 5628 (no date); Whitesage Valley, BF Harrison 6366 (1935); T20S, R8W, BF Harrison 10161 (1941); T24S, R17W, WP Cottam 8510 (1941); T25S, R18W, B Maguire 20876 (1941); T25S, R18W, BF Harrison 11631 (1950); T25S, R18W, RC Holmgren 265 (1963); T24S, R17W, MG Barlow 49 (1964); T25S, R18W, ND Atwood 1502 (196_); T24S, R17W, J Jefferies 161 (1972); T25S, R17W, SL Welsh et al. 13298, 13304 (1976); T25S, R18W, 14492 (1976); T25S, R18W, L Hart, s.n. (1977); T24S, R17W, K Ostler & D Anderson 1033 (1978); T25S, R18W, K Ostler & D Atwood 1229 (1978); T25S, R17W, SL Welsh & M Chatterley 19496 (1980); T25S, R18W, SL Welsh & M Chatterley 19573 (1980).

Sphaeralcea psoraloides Welsh
Map 103

Family: Malvaceae.
Original citation: Great Basin Naturalist 40: 36. 1980.
Federal designation: endangered, category 2.

The type population of this recently described globemallow is located several miles west of Hanksville in Wayne County. Other populations were discovered on the San Rafael Swell several miles north of the type locality in Emery County. A Grayia-Ephedra community is habitat for the species. It is associated geologically with clay barrens of the Carmel Formation. Elevational range extends from 4600 to 6000 feet.

Emery County: T26S, R10E, JG Harris 857 (1980); T26S, R9E, JG Harris 860 (1980); T25S, R7E, JG Harris 986 (1980); T26S, R8E, JG Harris 1009 (1980). Wayne County: T27S, R8E, SL Welsh 13345, 13348, Holotypes (1976).

Sphaeromeria capitata Nutt.
Map 104

Family: Asteraceae.
Federal designation: none.
UNPS recommendation: category 2.

This rare species is known from only one location in Utah, along the east fork of the Sevier River in Garfield County. However, the species also occurs in Montana and Wyoming. The plant grows with western bristlecone pine on ridges of Cedar Breaks limestone at an elevation of approximately 7800 feet.

Garfield County: T35S, R4W, JL & CG Reveal 1023 (1968).

Sphaeromeria ruthiae Holmgren, Shultz, & Lowrey
Map 105

Family: Asteraceae.
Federal designation: threatened, category 2.

The Zion tansy is known only from Zion National Park in Washington County. Habitat for the plant is the crevices and canyon walls of the Navajo Sandstone Formation. Range of elevation is about 4800 feet.

Washington County: T41S, R10W, Nelson 10098, Paratype-NY-UTC (1972); T41S, R10W, Holmgren, Shultz, & Lowery 16003, Isotype (1974); east of Parunuweap Canyon, park boundary, J Anderson (1979); T40S, R10W, Neese and Kass 12609 (1982).

Swertia gypsicola Barneby
Map 106

Family: Gentianaceae.
Federal designation: endangered, category 1.

The green gentian has previously been known only from Nevada, where it occurs in Nye County. In 1983 Cronquist collected the taxon north of Garrison in Millard County, Utah. The plant grows on exposed calcareous slopes in a salt desert shrub community, where it is associated with other mound-forming plants and sagebrush. Elevation ranges from 5150 to 5600 feet.

Millard County: T20S, R19W, A Cronquist 11838 (1983).

Thelypodiopsis argillacea Welsh & Atwood
Map 107

Family: Brassicaceae.
Federal designation: endangered, category 1.

Several populations of this species are known, but they are restricted in location to near the east slope of Big Pack Mountain in Uintah County. Habitat for the species is a desert shrubland and scattered pinyon-juniper community on the Green River Shale

Formation. Elevation is approximately 5000 feet. This species was transferred to Schoencrombe by Rollins (1982).

Uintah County: T11S, R20E, D Atwood 6627, Holotype (1976); T11S, R20E, Neese & England 4284 (1978); T11S, R20E, E Neese & JS Peterson 4620 (1978); T11S, R20E, E Neese 4962, 4972 (1978); T11S, R20E, KM Mutz, non-BRY (1979); T10S, R18E KM Mutz, non-BRY (1979); T10S, R19E, KM Mutz, non-BRY (1979); T11S, R19E KM Mutz, non-BRY (1979).

Thelypodiopsis barnebyi Welsh & Atwood in Welsh

Map 108

Family: Brassicaceae.
Citation: Brittonia 33: 300. 1981.
Federal designation: threatened, category 2.

The Barneby thelypody is known only from the type locality near Sy's Butte on the San Rafael Reef in Emery County. It occurs in a salt desert shrub community dominated by *Ephedra* and shrubby *Eriogonums* on rocky outcrops and in sandy soil. Elevational range of the population extends from 5400 to 5750 feet. This species was transferred to Schoencrombe by Rollins (1982).

Emery County: T26S, R9E, JG Harris 840, Holotype (1980); T26S, R9E, JG Harris 1007, 1008, Paratypes (1980); T26S, R9E, SL Welsh 20345, Holotype (1981); T26S, R9E, D Atwood, S Goodrich 8646, 8644 (1982).

Townsendia aprica Welsh & Reveal

Map 109

Family: Asteraceae.
Federal designation: endangered, category 1.

The last-chance townsendia occurs in two Utah counties, Emery and Sevier. The plant grows on tuffaceous strata of the Mancos Shale Formation in a mixed pinyon-juniper and grassland community. Elevational range extends from 6000 to 7400 feet.

Emery County: T24S, R6E, M Wright 51 (1971); T24S, R6E, Neese & White 7321, 7330 (1979); T24S, R6E, S White & G Moore 62, 65, 91 (1979); T24S R6E, JG Harris 647 (1980). Sevier County: T24S, R5E, Reveal & Welsh 721, Holotype (1966); T24S, R5E, SL Welsh et al. 8972 (1969); T24S R5E, E Neese & S White 3017 (1977).

Trifolium andersonii Gray var. *friscanum* Welsh

Map 110

Family: Fabaceae.
Original citation: Great Basin Naturalist 38: 355. 1978.
Federal designation: endangered, category 1.

This newly described variety was known to occur only on the rocky ridges and limestone gravels of the San Francisco Mountains, near Frisco in Beaver County. However, it was discovered in 1982 in similar habitat areas on the Tunnel Spring Mountains in the Desert Experimental Range in Millard County. It has been regarded as endangered, but that designation should probably be tentative until additional information can be gathered. Elevational range of the plant is from 6700 to 8000 feet.

Beaver County: T27S, R13W, F Peabody et al. 406, Holotype (1976); T27S, R13W, K Ostler & D Anderson 1206, 1260 (1978); T26S, R13W, K Ostler & D Anderson 1349 (1978); T27S, R13W, SL Welsh & M Chatterley 19526 (1980); T27S, R13W, SL Welsh & M Chatterley 19658 (1980). Millard County: T24S, R17W, S Goodrich 16953 (1982); T24S, R17W, S Goodrich 16972 (1982).

Xylorhiza cronquistii Welsh & Atwood

Map 111

Family: Asteraceae.
Original citation: Brittonia 33: 302. 1981.
Federal designation: threatened, category 2.

Only a single large and uniform population of the Cronquist xylorhiza is known, and this occurs near Horse Mountain in north central Kane County. The plant is confined to the badlands topography of the Kaiparowits Formation and is associated with a broad-leaved phase of *Grayia brandegei*. Elevation of the species is approximately 6600 feet.

Kane County: T38S, R2E, SL & SL Welsh 12819, Holotype (1975).

Plants no Longer Under Review

Plants that have previously been considered in categories 1 or 2 but which were downgraded to category 3 in the November 1983 *Federal Register* are dicussed below. No distribution maps are included for these species. All but one of the taxa are category 3C plants, meaning that the distribution of the plant is wider than previously supposed or that there are no current threats to the taxa. However, if additional threats to these species are discovered, the plants could once again become candidates for listing.

Angelica wheeleri Wats.

Family: Apiaceae.
Federal designation: category 3C.

The Wheeler angelica is a rare plant, apparently restricted to the northern and central parts of Utah. It is fairly widespread, one population having been located in each of five separate counties. However, the populations are extremely disjunct, and the reason for this distribution pattern is not known. Though the plant is no longer under review for listing, as additional information about the species is accumulated its status may change. *Angelica wheeleri* is a streamside or wet meadow species and grows at elevations ranging from lower foothills to approximately 10,000 feet.

CACHE COUNTY: T12N, R2E, LC Higgins 10371 (1977). JUAB COUNTY: T12S, R2E, S Goodrich 15862 (1981). PIUTE COUNTY: T27S, R1W, LC Higgins 4721 (1971). SEVIER COUNTY: T26S, R2E, LC Higgins (1977). UTAH COUNTY: T5S, R3E, Cottam 3845 (1928).

Astragalus chamaemeniscus Barneby

Family: Fabaceae.
Federal designation: category 3C.

The ground-crescent milkvetch was, until recently, considered restricted to east central Nevada, where it grows in Lincoln, White Pine, and Nye counties. However, during the 1981 field season it was collected on the Escalante Desert in Iron County, Utah. It occurs on hillsides and valley floors in deep sands derived from limestone formations, generally in a sagebrush community type. Elevation extends from 4900 to 6500 feet. Only one population is known from Utah, and so the plant is considered rare in this state even though its total distribution does not warrant current consideration for listing. Seven collections from Nevada are deposited at BRY.

IRON COUNTY: T33S, R17W, F Smith & S Jensen, s.n. (1981).

Astragalus consobrinus (Barneby) Welsh

Family: Fabaceae.
Federal designation: category 3C.

The Bicknell milkvetch is based on *A. castaneiformis* var. *consobrinus*. Collections of the species at BRY are from three counties. However, Barneby's discussion of the basionym includes two additional counties as part of the distribution. This milkvetch grows in alluvial soils of varied compositions, usually on open gravelly knolls and hillsides in sagebrush-grasslands and pinyon-juniper communities. Elevational range extends from 6000 to 8000 feet.

EMERY COUNTY: T23S, R6E, Neese & White 7355 (1979); T20S, R6E, R Foster 8262 (1979); T19S, R11E, D Atwood and B Thompson (1983). SEVIER COUNTY: T26S, R4E, D Atwood and B Thompson 7597 (1980). WAYNE COUNTY: T28S, R4E, Ripley & Barneby 8605 NY (1947); T29S, R5E, NH Holmgren et al. 2092 (1965); T28S, R3E, SL Welsh et al. 13088 (1976); T28S, R3E, SL Welsh, et al. 13090 (1976); T30S, R6E, SL Welsh 13356 (1976); T28S, R4E, SL Welsh & G Moore 13837 (1976); T27S, R4E, SL Welsh 14973 (1977); T27S, R5E, SL and ER Welsh 21214 (1982).

Astragalus henrimontanensis Welsh

Family: Fabaceae.
Federal designation: category 3C.

Distribution of the Dana milkvetch is restricted to Garfield County where all but one population occurs on the Henry Mountains. The other is from the Aquarius Plateau. This species grows in quaternary alluvium and colluvium over various geologic strata in a mixed ponderosa pine, pinyon, juniper, and sagebrush community. Elevational range extends from 7400 to 9200 feet.

GARFIELD COUNTY: T31S, R10E, A Cronquist and N Holmgren 9296 (1961); T33S, R3E, NH Holmgren et al. 2106 (1965); T32S, R10E, SL Welsh 9817 (1970); T31S, R10E, B Wood s.n. (1972); T31S, R10E, E Neese 1697 (1976); T31S, R10E, E Neese 1738a (1976); T31S, R10E, E Neese & S White 3087 (1977); T31S, R10E, E Neese, S White 3415 (1977); T32S, R10E, E Neese and S White 3459 (1977); T33S, R11E, E Neese & S White 4096 (1977); T31S, R10E, E Neese 5061 (1978); T33S, R10E, E Neese 5128 (1978); T34S, R11E, E Neese & A Tye 9948 (1980).

Astragalus lentiginosus Dougl. ex Hook. var. *pohlii* Welsh & Barneby

Family: Fabaceae.
Citation: Iselya 2: 1–2. 1981.
Federal designation: category 3C.

The Pohl milkvetch is known from three localities in Tooele County, one from south of Benmore, another from north of Vernon, and the third from Skull Valley. This unique member of the lentiginosus complex grows in silty gravels of a greasewood-sagebrush community type at an elevation ranging from 4350 to 5500 feet.

TOOELE COUNTY: T9S, R4W, JD Walker s.n., Paratype (1962); T7S, R5W, SL Welsh 16498, 16501, Paratype (1978); T8S, R5W, SL Welsh et al. 16743, Holotype (1978); T4S, R8W, A Taye 1332 (1981).

Astragalus lutosus Jones

Family: Fabaceae.
Federal designation: category 3C.

Populations of the Dragon milkvetch are centered in Utah near the junction of the White River and the Colorado-Utah border in eastern Uintah County. However, the plant is abundant over a wide area and also occurs in Colorado. The species is confined to white shale outcrops of the Green River Shale Formation. Habitat for the taxon is a mixed desert shrub community, and elevational range extends from 5200 to 6950 feet. During the 1982 field season one dozen new collections of the species were made, twice as many as had been previously collected. Two of the recent collections come from Wasatch County, which extends the distribution of this species in Utah.

UINTAH COUNTY: White River, ME Jones, Isotype (1908); T12S, R25E, ME Jones, Paratype (1908); T12S, R24E, E Neese & JS Peterson 6103 (1978); T12S, R24E, L England 1772 (1979); T12S, R24E, L England 1775 (1979); T11S, R24E, SL Welsh 19617 (1980); T12S, R24E, E Neese & F Smith 11387, 11391 (1982); T11S, R24E, E Neese & C Fullmer 11468 (1982); T11S, R25E, E Neese & C Fullmer 11469, 11476 (1982); T12S, R24E, K Thorne & B Neely 1791 (1982); T12S, R25E, K Thorne et al. 1827 (1982); T11S, R25E, E Neese & C Fullmer 11487 (1982); T10S, R25E, K Thorne & C Fullmer 1937 (1982); T10S, R25E, E Neese & C Fullmer 11677 (1982); T10S, R25E, E Neese & F Smith 12054 (1982). WASATCH COUNTY: T5S, R11W UBM, S Goodrich, 11790, 11793 (1982); T5S, R11W UBM, S Goodrich et al. 19733 (1983).

Astragalus monumentalis Barneby

Family: Fabaceae.
Federal designation: category 3C.

The monument milkvetch occurs in San Juan County from Canyonlands National Park to west of Natural Bridges National Monument and in Garfield County west of the Colorado River, near Hite. The plant grows on exposed rim rock and slick rock of the Cedar Mesa Sandstone Formation in pinyon-juniper and warm desert shrub communities. Elevational range extends from 4000 to 6200 feet.

GARFIELD COUNTY: T33S, R14E, SL Welsh 5214 (1966); T33S, R14E, SL Welsh & G Moore 7122 (1968); T32S, R12E, KD Kaneko 24 (1971); T33S, R14E, SL Welsh 11027 (1971); T32½S, R15E, A Cronquist 11382 (1976); T33S, R14E, E Neese & S White 2816 (1977); T33S, R14E, SL Welsh 20352 (1981); T33S, R14E, KD Heil 1622 (1983); T33S, R14E, SL and BT Welsh, M Chatterley 21953 (1983); T32S, R14E, SL Welsh 21784 (1983). SAN JUAN COUNTY: T36S, R16E, BF Harrison 11595 (1950); T30S, R19E, SL Welsh et al. 2888 (1964); T31S, R19E, SL Welsh et al. 2901 (1964); T30S, R19E, SL Welsh et al. 2954 (1964); T30S, R19E, G Moore 307 (1965); T30S, R19E, G Moore 348a (1965); T34S, R15E, SL Welsh 5191 (1966); T35S, R5E, SL Welsh 5211 (1966); T34S, R15E, SL Welsh 5212 (1966); T30S, R19E, SL Welsh 7030 (1968); T30S, R19E, SL Welsh et al. 8900 (1969); T33S, R14E, CS Schoener 24 (1971); T36S, R15E, D Atwood 7503 (1980); T30S, R19E, SL Welsh et al. 21113 (1982); T32S, R18E, SL Welsh 21144 (1982); T33S, R14E, BT, SL & ML Welsh 1428 (1983).

Cryptantha johnstonii Higgins

Family: Boraginaceae.
Federal designation: category 3C.

Occurrences of the Johnston catseye are known only from an area in the middle of Emery County where the plant grows on low rolling hills and sandy clay soil of the Carmel Formation. Associated vegetative types include mixed desert shrub and scattered pinyon and juniper communities. Elevational range of the species extends from 5200 to 5800 feet.

EMERY COUNTY: San Rafael, Harrison 5628 (1931); T19S, R11E, Higgins 1310, Holotype, Isotype (1968); T20S, R13E, LC Higgins 3520 (1970); T20S, R13E, LC Higgins 3522 (1970); T22S, R8E, A Cronquist 11417 (1976); T20S, R9E, NH Holmgren et al. 9111 (1979); T23S, R9E, D Atwood 7211 (1979); T22S, R8E, SL Welsh 20457 (1981); T19S, R12E, D Atwood 9236 (1983).

Eriogonum clavellatum Small

Family: Polygonaceae.
Federal designation: threatened, category 2.

The Comb Wash buckwheat is restricted in distribution to a small area west of Bluff in San Juan County near Comb Wash. It occurs on the clay or sandy clay slopes of the Moenkopi Formation in the desert shrub community. Elevation extends from 3300 to 4500 feet. The species has also been discovered in Montezuma County, Colorado.

SAN JUAN COUNTY: Barton Range, Eastwood 132, Type-NY (1895); T42S, R21E, Maguire 5853 (1933); T40S, R20E, Reveal et al. 840 (1967); T40S, R20E, Atwood 2472 (1970); T40S, R20E, Welsh & Atwood 9977 (1970); T40S, R20E, D Atwood 7183 (1979); T41S, R19E, D Atwood 7872 (1981).

Eriogonum corymbosum Benth.
var. *matthewsae* Reveal

Family: Polygonaceae.
Federal designation: category 3C.

The Matthews buckwheat is known from near Zions Canyon in Washington County. Taxonomic problems exist with this variety. It is probable that it should be considered as a morphological subunit of another species in the genus. The taxon occurs on the purplish siltstone and sandy loam soil of the Chinle formation at 3800 to 4000 feet elevation.

Washington County: T42S, R10W, Welsh et al. 9509, Isotype (1969); T41S, R10W, R Foster 5663 (1977); T42S, R10W, JD Brotherson 3124 (1982); T41S, R10W, J Anderson (1982).

Eriogonum nanum Reveal

Family: Polygonaceae.
Federal designation: category 3B.

High elevation talus slopes and limestone outcrops in the subalpine conifer zone are habitat for this species. Elevation ranges from 8,500 to 10,050 feet. Until recently, occurrences of the dwarf buckwheat were considered restricted to Weber and Box Elder counties. However, in 1977 the plant was collected on Mt. Bartles, in Carbon County. Current taxonomic studies suggest that the variation attributed to this taxon may stem from ecological responses and that the plant may not be worthy of specific designation.

Box Elder County: T8N, R1W, JL & CG Reveal 4608, 4609 (1976). Carbon County: T13S, R14E, S Welsh & S Clark 15905 (1977). Weber County: T8N, R1, Reveal & Holmgren 665, Type (1964); T5N, R1E, SL Clark 2224 (1972); T8N, R1W, SL Clark 2327 (1972).

Eriogonum tumulosum (Barneby) Reveal

Family: Polygonaceae.
Federal designation: category 3C.

This small mat-forming buckwheat occurs primarily in central Duchesne County. However, several populations exist in Emery County, one population has been reported from Uintah County, and one population has been discovered in Juab County. The plant grows in clay soils and sandstone ledges and is associated with a mixed desert shrub, pinyon-juniper community type. Elevational range extends from 5700 to 6600 feet.

Duchesne County: T3S, R6W UBM, NH Holmgren et al. 1941 (1965); T4S, R5W UBM, JL & CG Reveal 849 (1967); T2S, R5W UBM, JL Reveal 964 (1968); T3S, R5W UBM, E Neese 4414 (1978); T3S, R5W, Welsh 18516 (1979); T1S, R7W UBM, R Foster 7846 (1979); T4S, R6W UBM, E Neese & SL Welsh 8897 (1980); T3S, R6W UBM, B Albee 5015 (1981); T4S, R5W UBM, K Thorne & C Fullmer 1624, 1739 (1982); T3S, R6W UBM, S Goodrich 16749 (1982); T4S, R5W UBM, K Thorne, C Fullmer 1739 (1982). Emery County: San Rafael Swell, WP Cottam 5233 (1932); T19S, R13E, LC Higgins & JL Reveal 1297 (1968); T24S, R11E, ND Atwood 1849 (1969); T24S, R9E, JG Harris 969 (1980). Juab County: T17S, R2W, S Goodrich 18137 (1983). Uintah County: T3S, R21E, S Goodrich 5686 (1976).

Gutierrezia sarothrae (Pursh) Britt. & Rusby var. *pomariensis* Welsh

Family: Asteraceae.
Federal designation: category 3C.

This Uinta Basin endemic is known from Duchesne and Uintah counties but occurs primarily near Vernal. It grows in clay, silt, or sandy clay substrates, on semibarren sites, in desert shrub and scattered juniper community types. This is a unique but somewhat common phase of *G. sarothrae*, and much possible habitat occurs within its relatively limited distributional range. Elevations extend from 4900 to 7000 feet.

Duchesne County: T1S, R4W UBM, E Neese & SL Welsh 8274 (1979). Uintah County: T4S, R24E, J Brotherson 800, 803 (1965); T4S, R23E, J Brotherson 831 (1965); T4S, R20E, SL Welsh & G Moore 6754 (1967); T6S, R24E, ND Atwood & LC Higgins 5853 (1973); T6S, R23E, E Neese & JS Peterson 6083 (1978); T5S, R21E, E Neese 6325 (1978); T5S, R22E, E Neese & L England 6686, 6689 (1978); T7S, R21E, BT Welsh & G Moore 249 (1979); T1S, R4W UBM, E Neese, SL Welsh 8274 (1979); T1N, R1E UBM, S Goodrich 13688 (1979); T4S, R24E, E Neese & M Chatterley 9887 (1980); T5S, R19E, Neese et al. 11017 (1981); T5S, R25E, E Neese & J Trent 12294 (1982); T6S, R25E, E Neese & J Trent 12315 (1982); T5S, R25E, E Neese & J Trent 12334 (1982).

Lomatium junceum Barneby & Holmgren

Family: Apiaceae.
Original Citation: Brittonia 31: 96. 1979.
Federal designation: category 3C.

This clump-forming lomatium was originally known only from the San Rafael Swell in Emery County, but has since been located on Fishlake National Forest lands in the southeastern corner of Sevier County, and along the Waterpocket Fold in both Wayne and Garfield counties. Habitat for the plant is barren clay draws and shaley hills of the Moenkopi formation in desert shrub and pinyon-juniper communities. Elevational range of the species extends from 5300 to 7700 feet.

Emery County: T20S, R11E, LC Higgins & JL Reveal 1268 (1968); T20S, R11E, SL Welsh 10963 (1971); T20S, R11E, S Daines 26 (1971); T20S, R11E, CS Schoener 59 (1971); T22S, R12E, M Wright 68 (1971); T20S, R11E, B Albee 2594 (1975); T22S, R11E, Welsh et al. 14767

(1977); T20S, R11E, SL Welsh 14770 (1977); T21S, R6E, SL Welsh 14783 (1977); T25S, R6E, SL Welsh 14794 (1977); T20S, R6E, S Clark & K Taylor 2463 (1977); T21S, R6E, ME Lewis 5366 (1978); T22S, R6E, S White 16, 95 (1979); T22S, R10E, JG Harris 680 (1980); T20S, R6E, D Atwood 7523 (1980); T25S, R10E, S Goodrich & D Atwood 16597 (1982). Garfield County: T34S, R7E, S Goodrich & SL Welsh 15648 (1981). Sevier County: T26S, R4E, D Atwood 7601 (1980). Wayne County: T32S, R7E, E Neese 11319 (1982); T32S, R7E, S Goodrich & D Atwood 16567 (1982).

Lygodesmia entrada Welsh & Goodrich

Family: Asteraceae.
Original citation: Great Basin Naturalist 40: 83. 1980.
Federal designation: category 3C.

This white-flowered skeleton plant with a characteristic bird's nest appearance is only known from west-northwest of Moab in Grand County and from southwest of Greenriver in Emery County. It is found growing on the Entrada Sandstone Formation in a juniper community type at an elevation of 4800 feet. It is related to the more common *L. arizonica*; however, its features are strikingly different from other plants of *Lygodesmia* in Utah.

Grand County: T24S, R21E, JS Allan 132 (1972); T24S, R19E, SL & SL Welsh 16725, Holotype (1978). Emery County: T22S, R14E, K Despain 401 (1978).

Parrya rydbergii Botsch.

Family: Brassicaceae.
Federal designation: category 3C.

The Rydberg parrya is known from near Bald Mountain in Summit County, Leidy Peak on the border of Uintah and Daggett counties, and Dead Horse Pass and the King's Peak area in Duchesne County. The plant is restricted to a habitat of rocky talus slopes and a spruce or alpine tundra community type. It is a high elevation species usually occurring between 10,500 and 12,200 feet.

Daggett County: Yellowstone Pass, C Lambert and CL Woods, USFS-INT (1926); T2N, R17E, AH Holmgren 7135 (1947). Duchesne County: T4N, R4W UBM, Murdock 54 (1950); T4N, R4W UBM, SL Welsh, E Neese, D Atwood 18933 (1979); T5N, R4W UBM, SL Welsh, E Neese, D Atwood 19010 (1979); T4N, R2W, SL Welsh, E Neese, D Atwood 19042 (1979). Summit County: Uinta Mtns, S Watson 54, Type-NY (1869); Uinta Mtns, ME Jones s.n. (1890); T1S, R11E, Weins 4959 (1974); T2N, R11E, Ostler 677 (1977); T1S, R9E, Ostler & McKnight 1628 (1978). Uintah County: T4N, R1E UBM, Waite 252, 297 (1971); T1S, R19E, D Atwood et al. 7955 (1981).

Sphaeralcea leptophylla (Gray) Rydb. var. *janeae* Welsh

Family: Malvaceae.
Original citation: Great Basin Naturalist 40: 36. 1980.
Federal designation: category 3C.

This variety of globemallow has been observed only in the area of the type collections at Canyonlands National Park, but threats seem to be minimal to the plant. It occurs on sandy slopes in a blackbrush community type along the White Rim road.

San Juan County: T29S, R18E, SL Welsh 7064, Paratype (1968); T29S, R18E, SL Welsh 7085, Holotype (1968).

Yucca toftiae Welsh

Family: Agavaceae.
Federal designation: category 3C.

Known populations of the Toft yucca occur along or near Lake Powell in southeastern Utah. Two populations occur in hanging gardens on the east side of the lake in San Juan County. The other known localities occur on ridges or along tributaries adjacent to the western edge of Lake Powell in Kane County. Habitat for the plant is sandy alluvium and sandstone outcrops. Approximate elevation is 4300 feet.

Kane County: T42S, R7E, SL Welsh & G Moore 11779, Paratype (1972); T41S, R8E, ES Nixon et al. 11073 (1982). San Juan County: T41S, R9E, ND Atwood 4112, Paratype (1972); T41S, R9E, SL Welsh 11935a, Holotype (1973).

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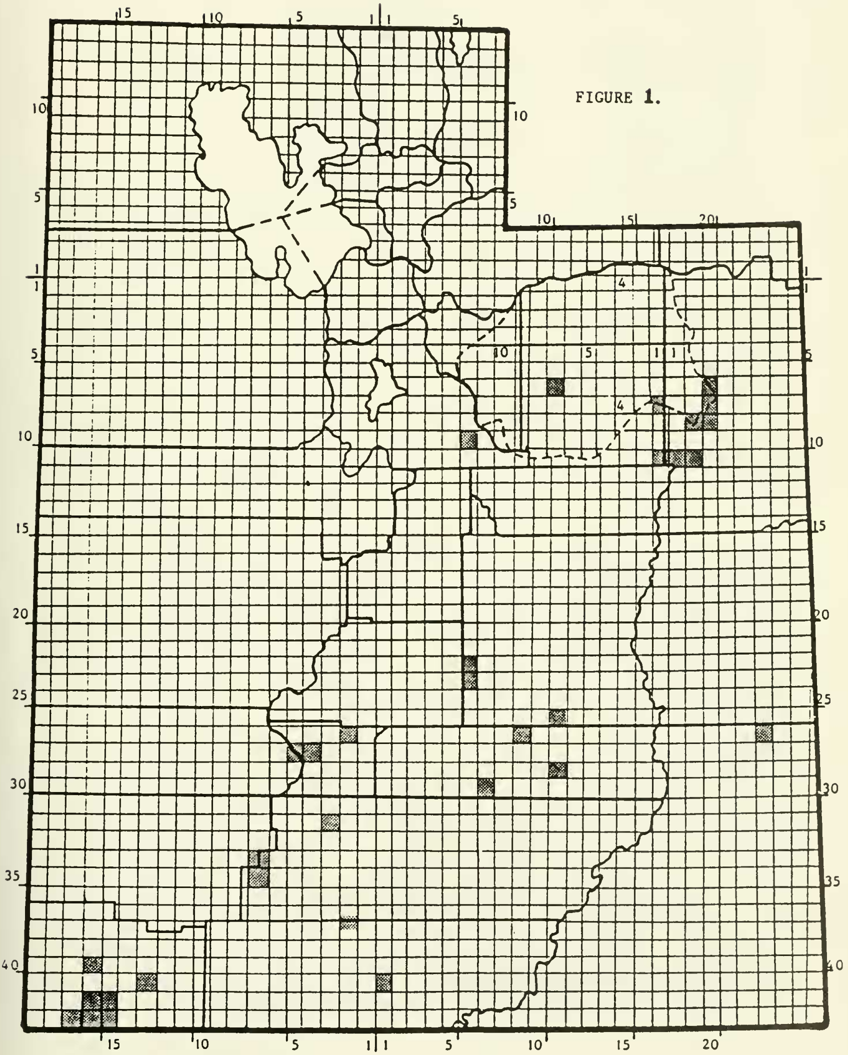


Fig. 1. Distribution by township and range of Utah's federally listed species.

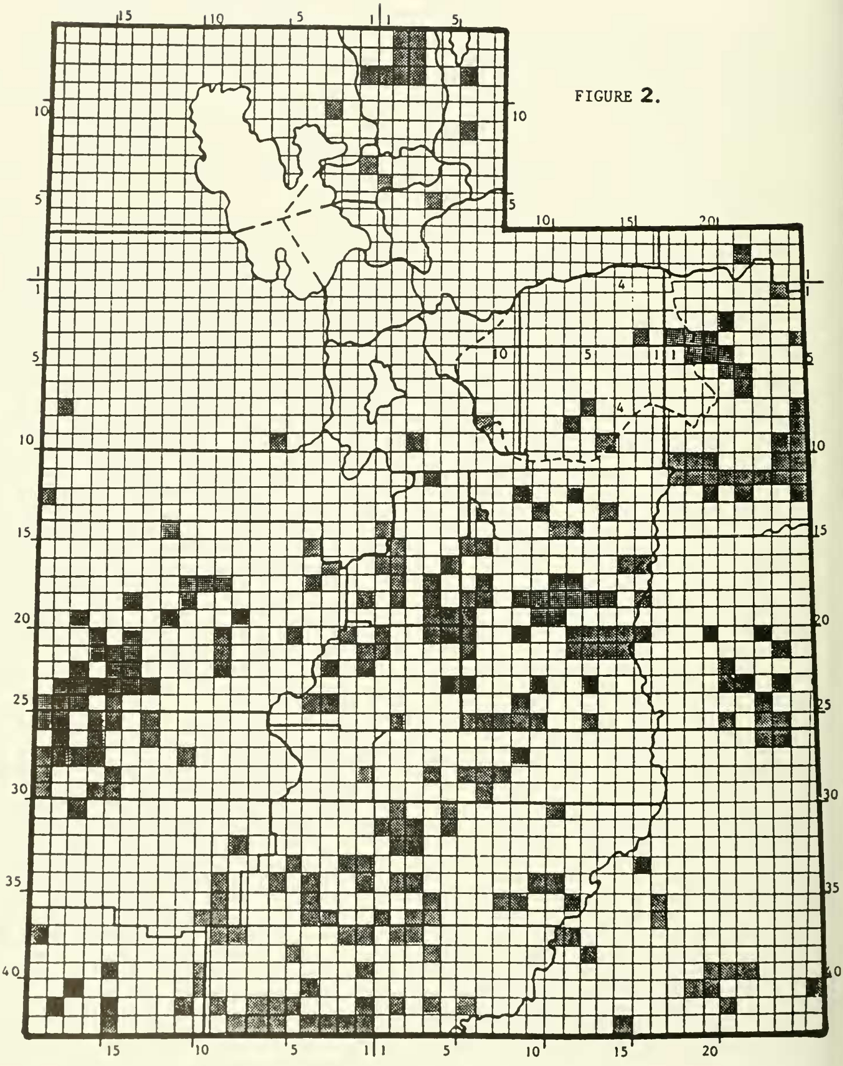
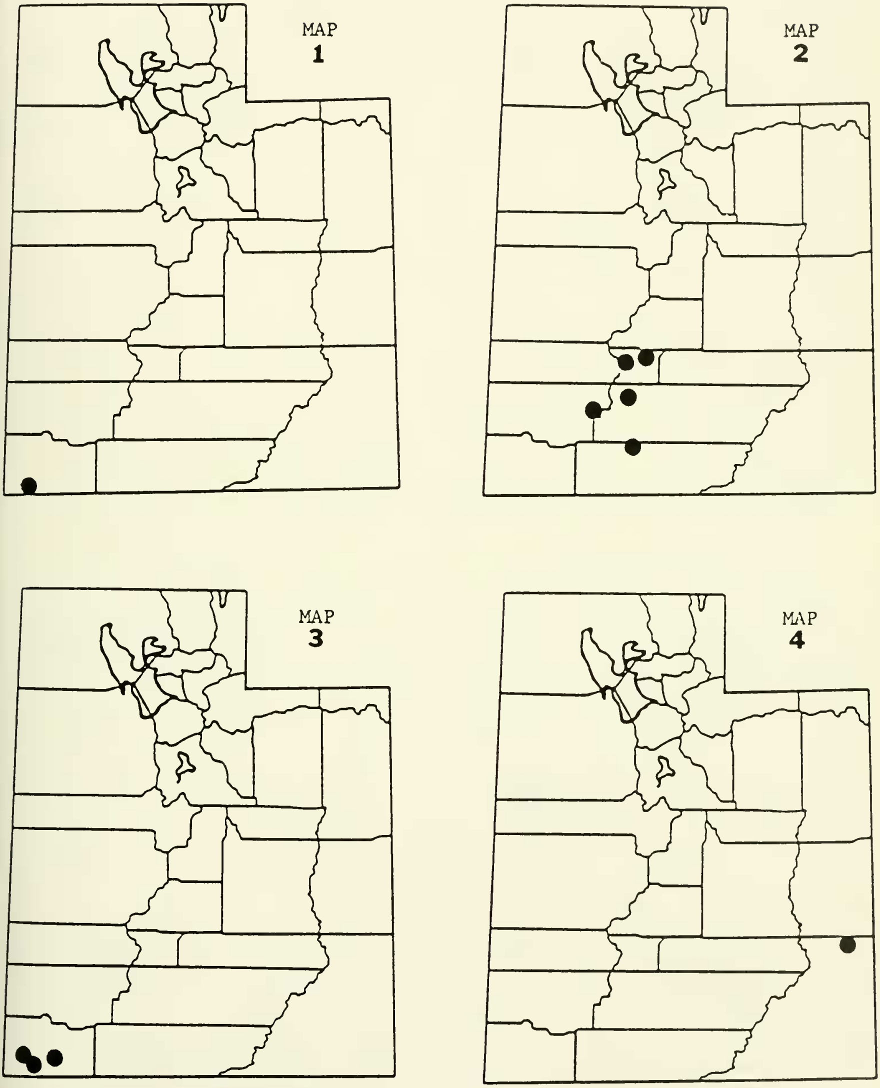
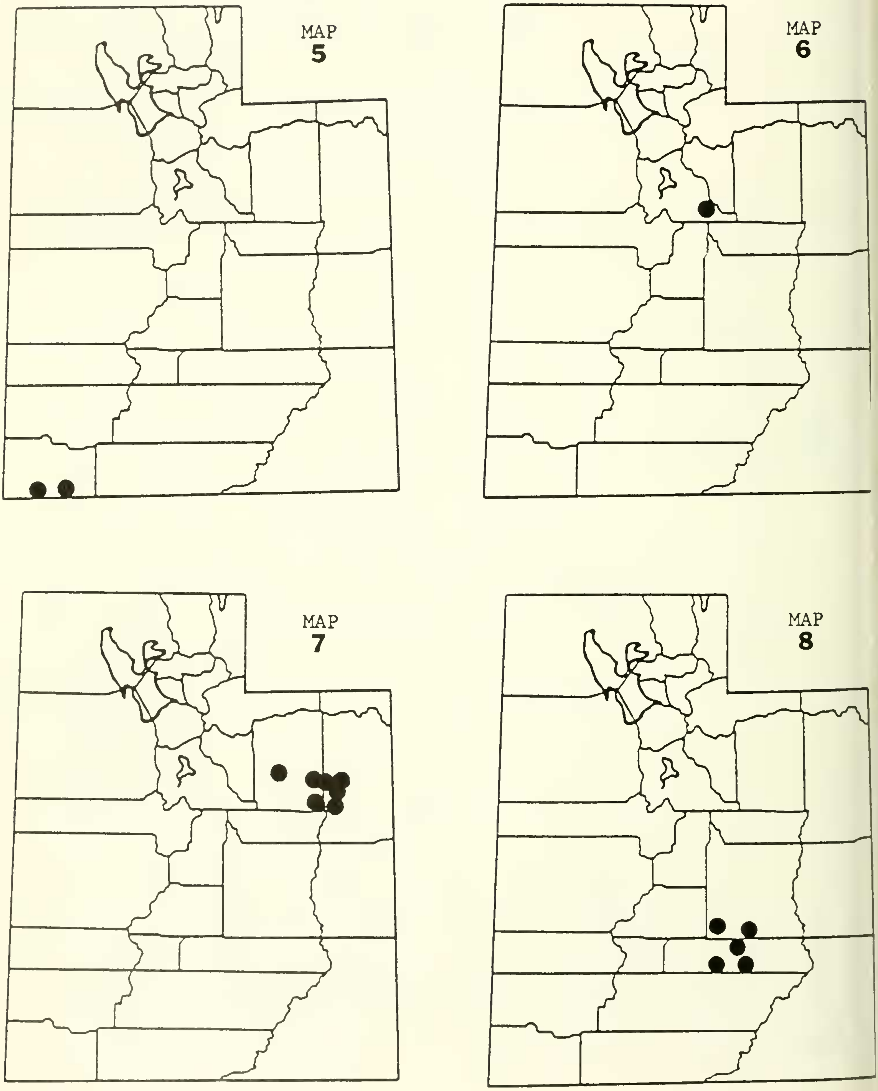


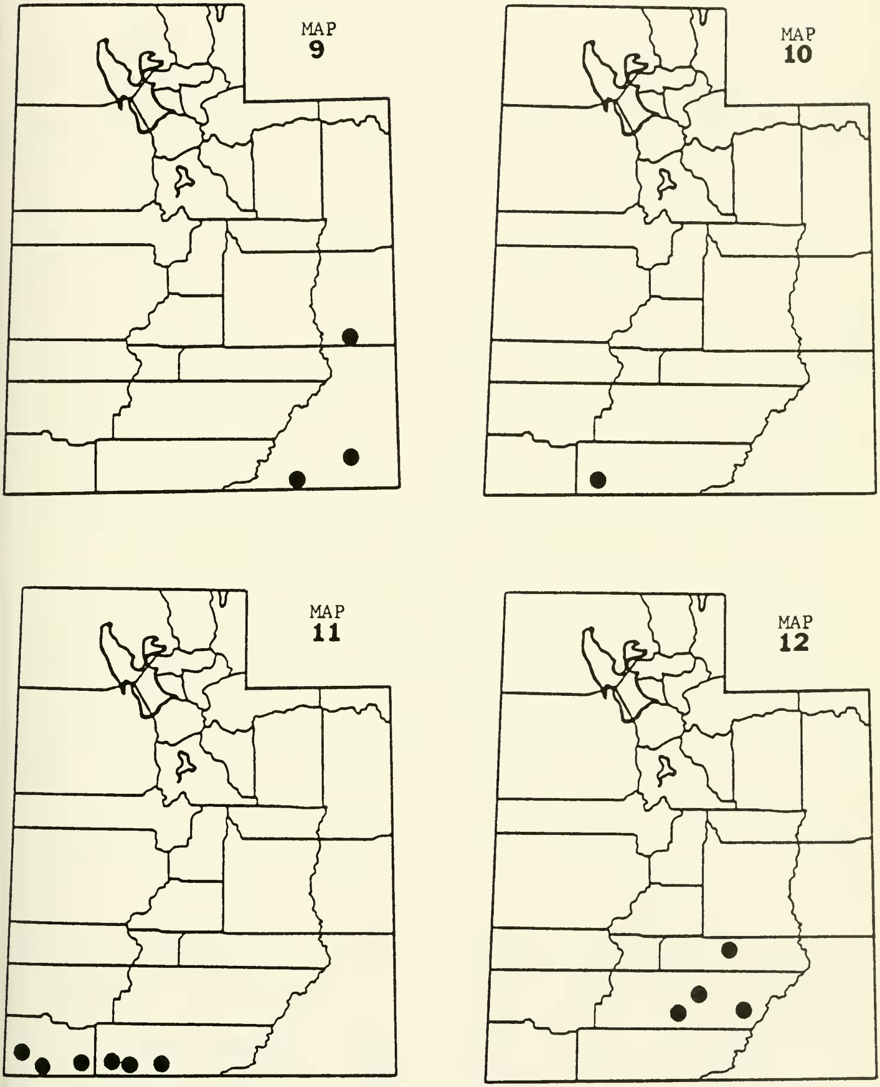
Fig. 2. Distribution by township and range of Utah's rare plant taxa under review for listing.



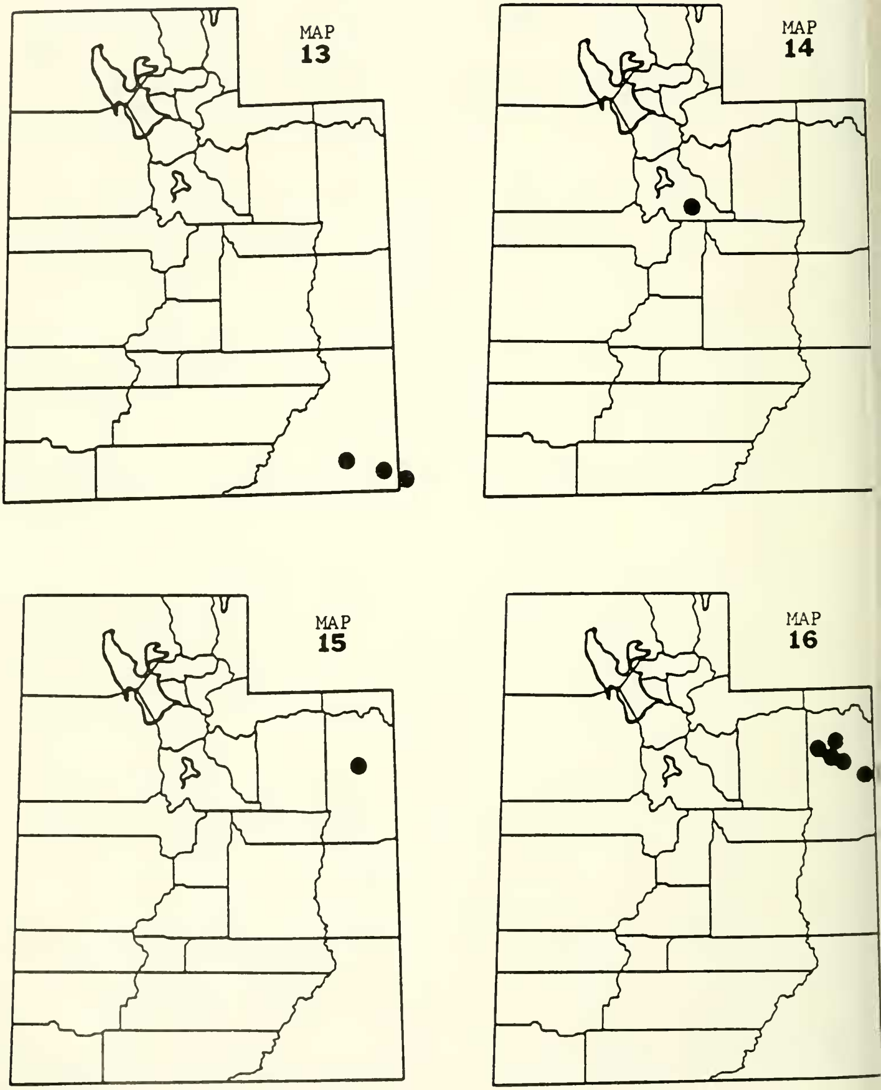
Maps 1–4. Distribution of (1) *Arctomecon humilis*, (2) *Astragalus perianus*, (3) *Echinocereus engelmannii* var. *purpureus*, and (4) *E. triglochidiatus* var. *inermis*.



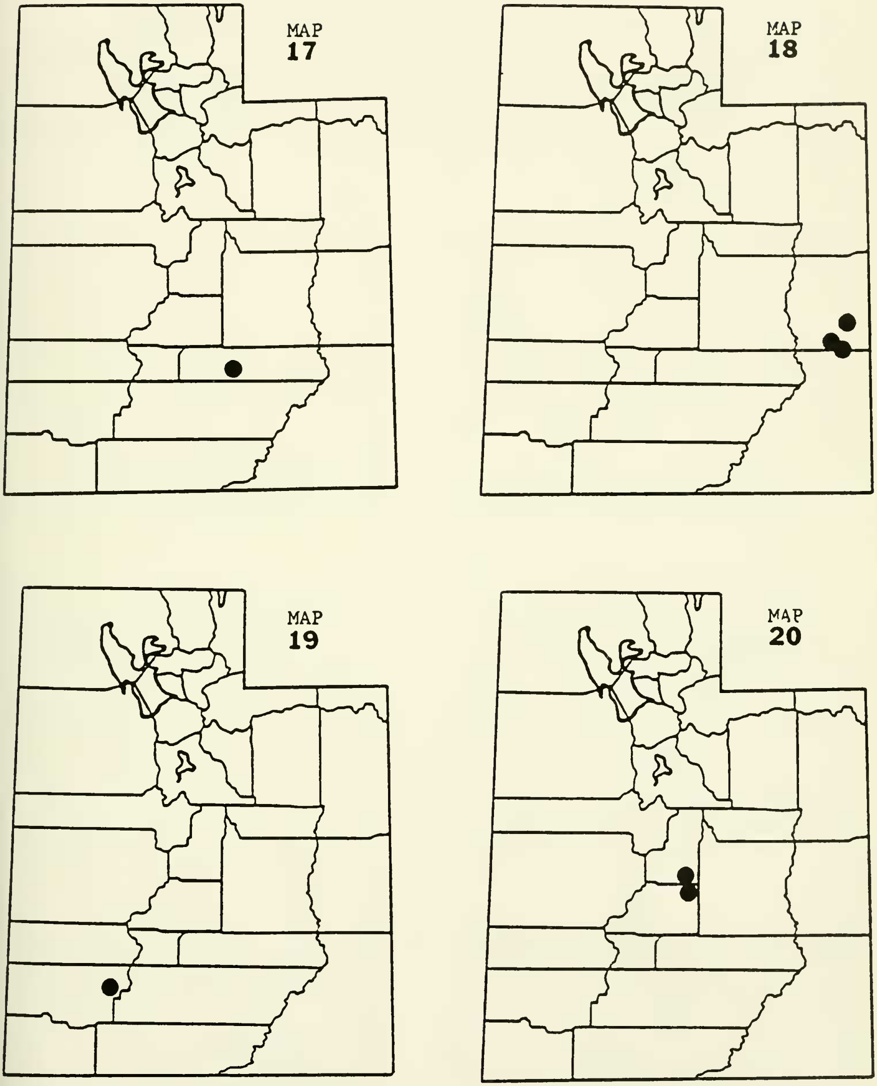
Maps 5–8. Distribution of (5) *Pediocactus sileri*, (6) *Phacelia argillacea*, (7) *Sclerocactus glaucus*, and (8) *S. wrightiae*.



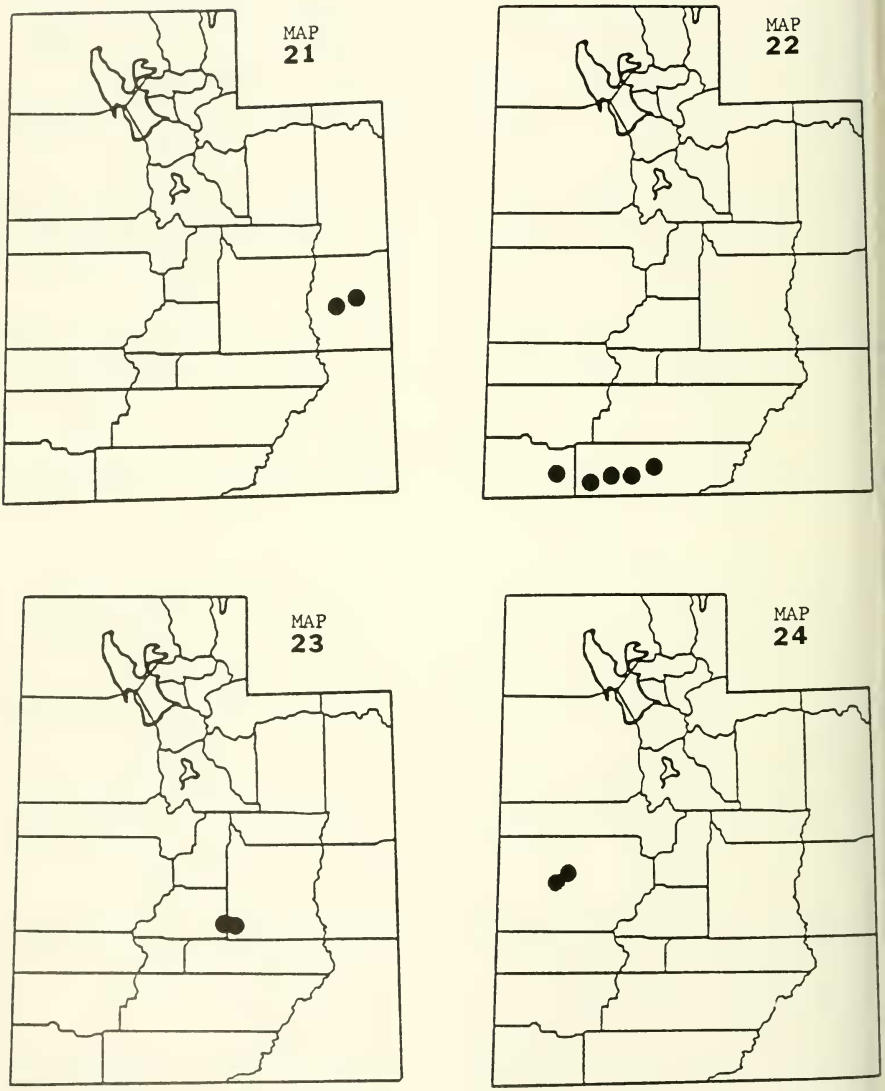
Maps 9–12. Distribution of (9) *Asclepias cutleri*, (10) *A. welshii*, (11) *Astragalus ampullarius*, and (12) *A. barnebyi*.



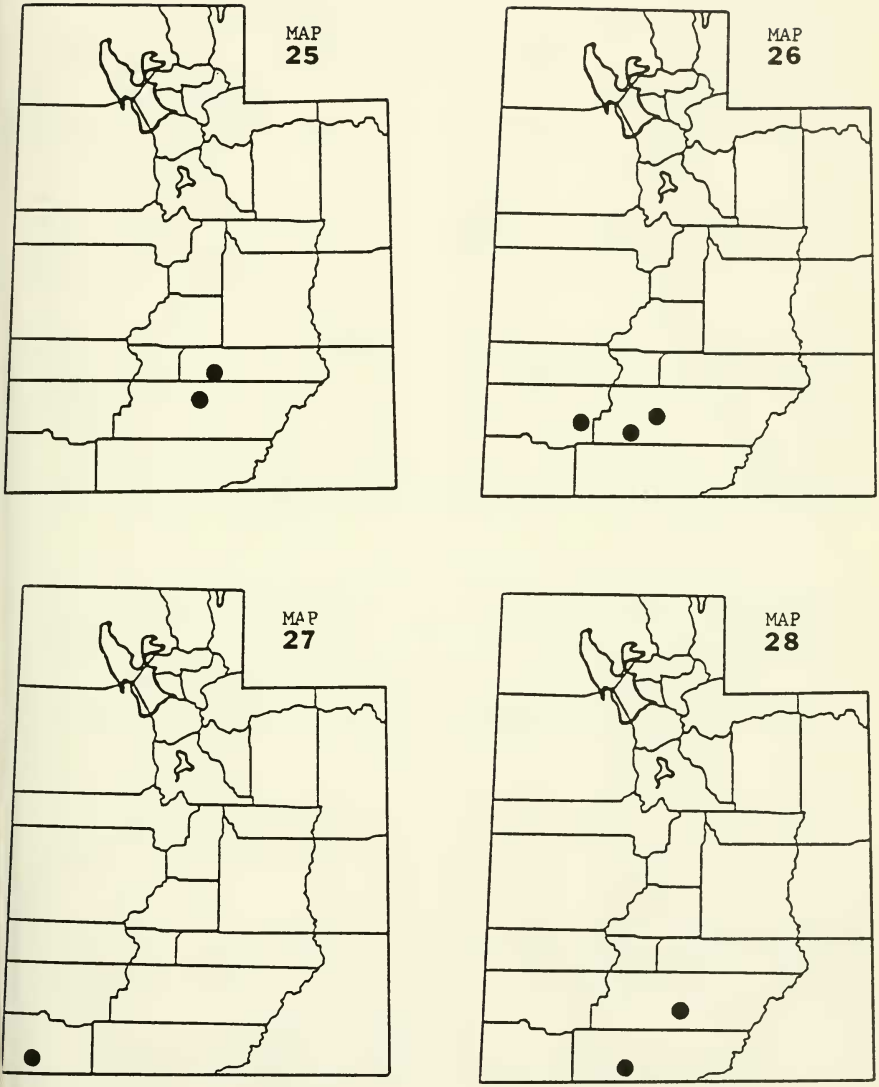
Maps 13–16. Distribution of (13) *Astragalus cronquistii*, (14) *A. desereticus*, (15) *A. equisolensis*, and (16) *A. hamiltonii*.



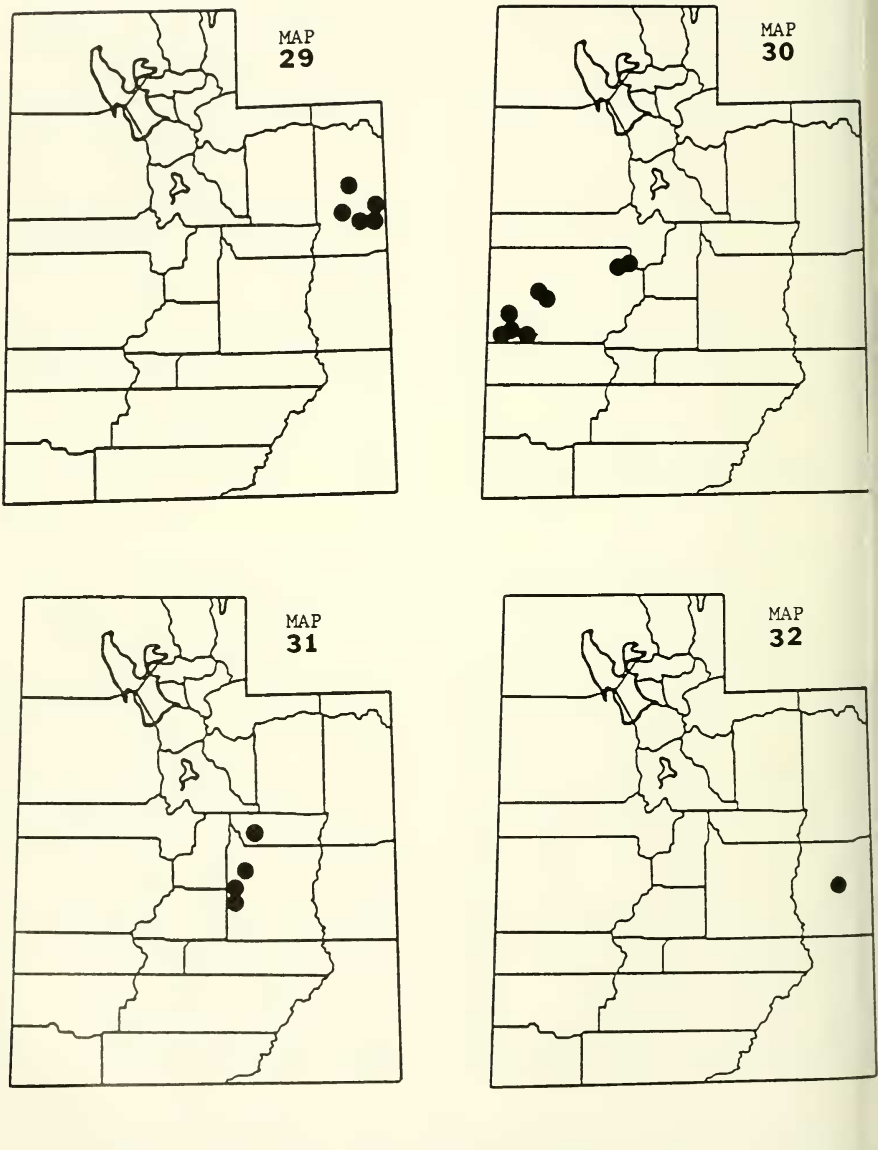
Maps 17–20. Distribution of (17) *Astragalus harrisonii*, (18) *A. iselyi*, (19) *A. lentiginosus* var. *ursinus*, and (20) *A. montii*.



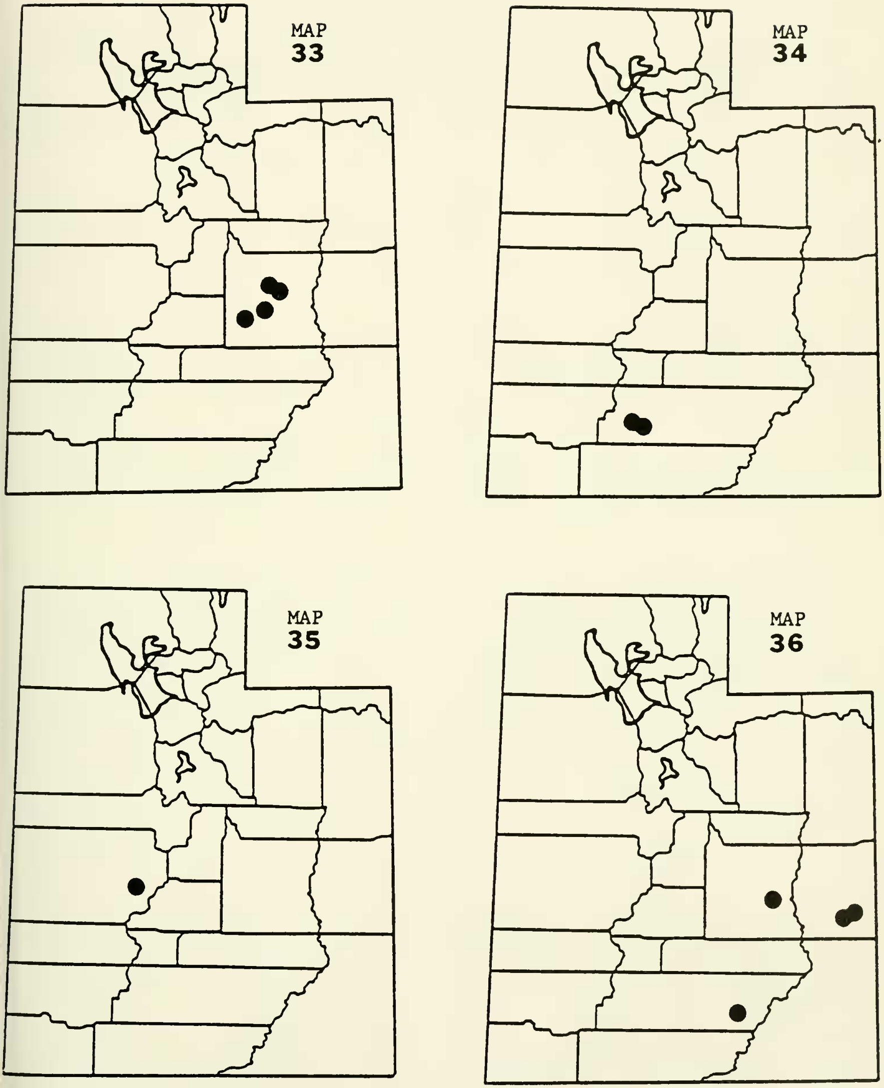
Maps 21–24. Distribution of (21) *Astragalus sabulosus*, (22) *A. striatiflorus*, (23) *A. subcinereus* var. *basalticus*, and (24) *A. uncialis*.



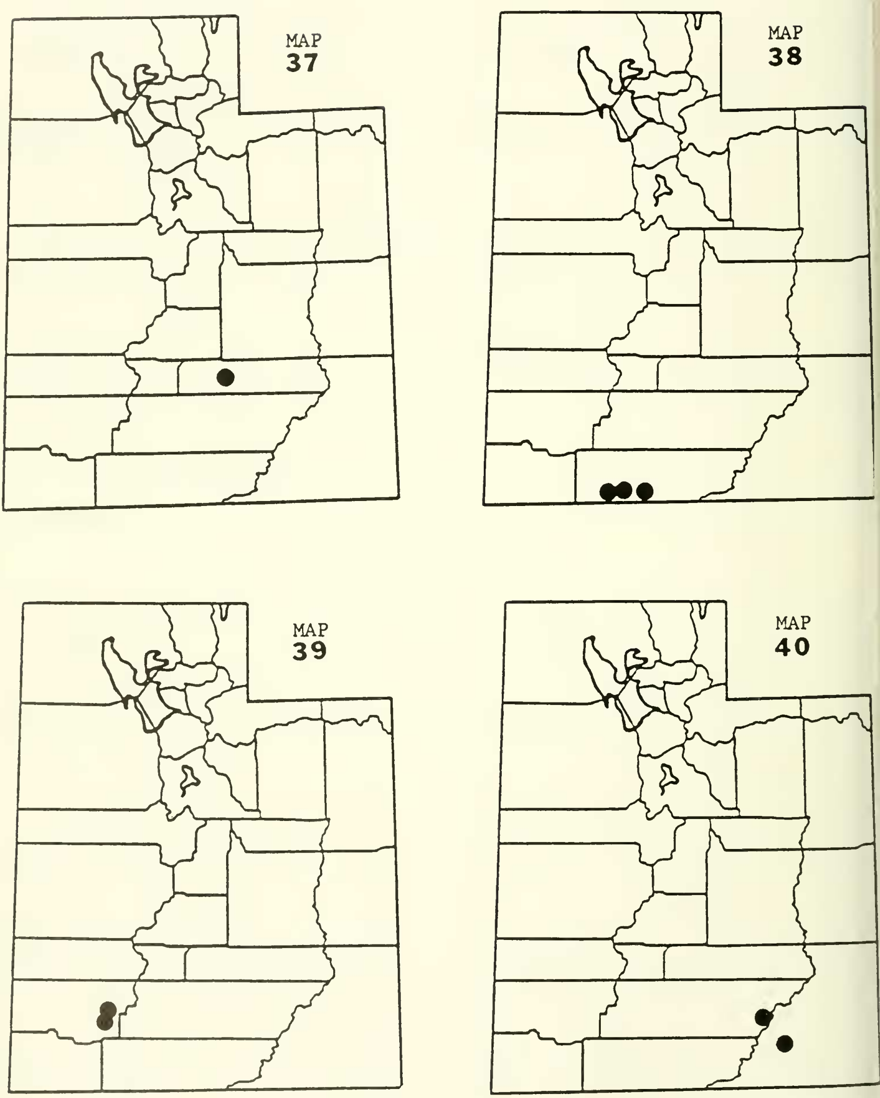
Maps 25–28. Distribution of (25) *Castilleja aquariensis*, (26) *C. revealii*, (27) *Cirsium virginensis*, and (28) *Coryphantha missouriensis* var. *marstonii*.



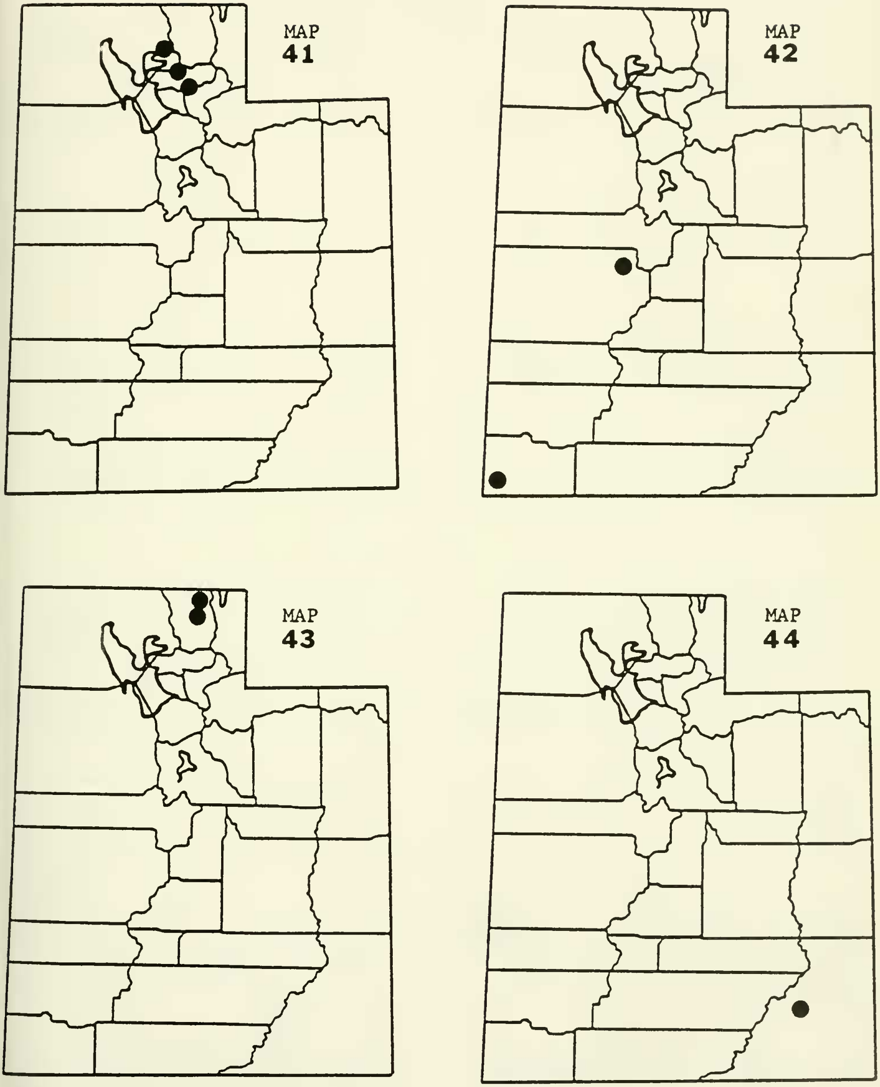
Maps 29–32. Distribution of (29) *Cryptantha barnebyi*, (30) *C. compacta*, (31) *C. creutzfeldtii*, and (32) *C. elata*.



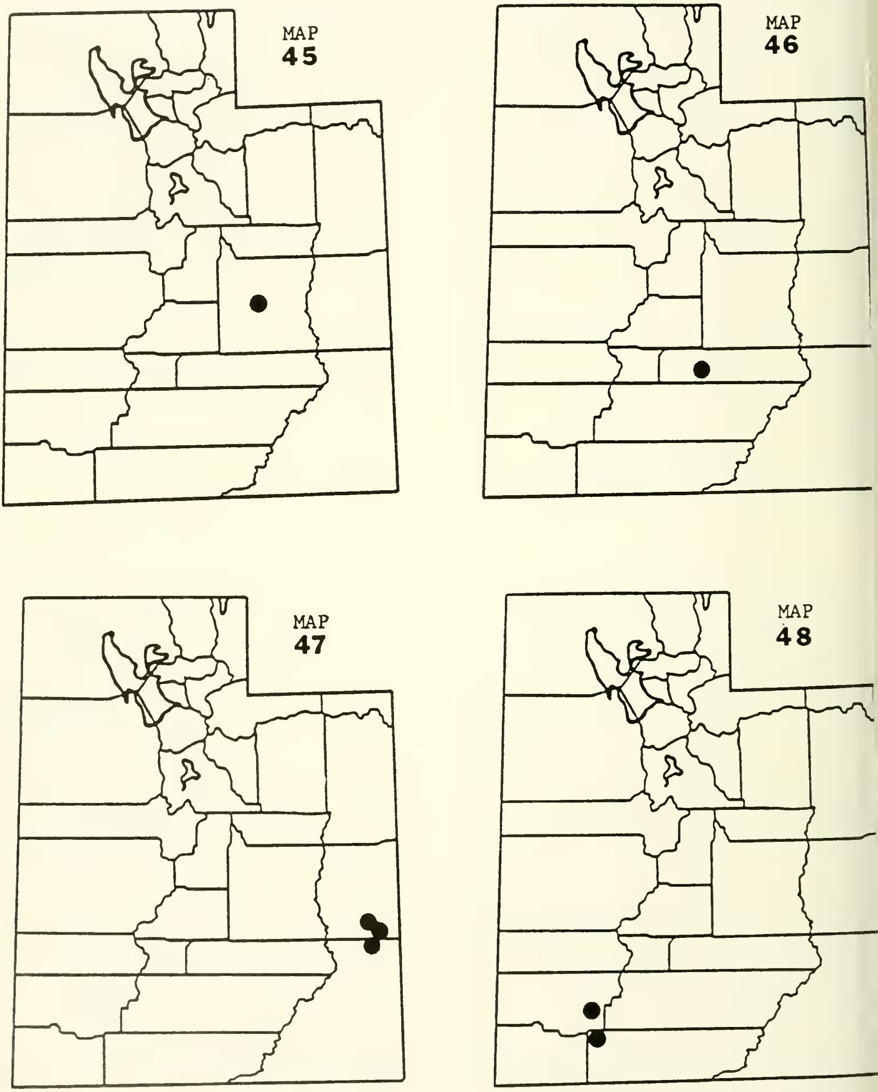
Maps 33–36. Distribution of (33) *Cryptantha jonesiana*, (34) *C. ochroleuca*, (35) *Cuscuta warneri*, and (36) *Cycladenia humilis* var. *jonesii*.



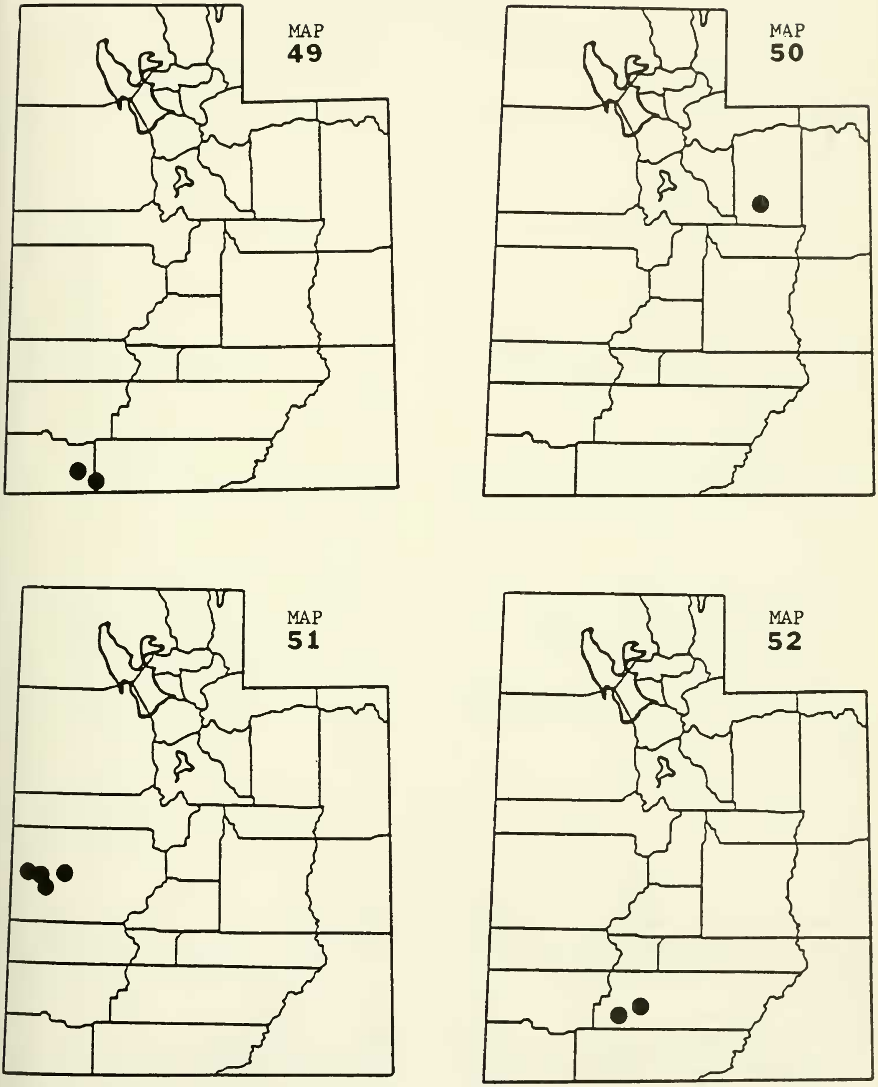
Maps 37–40. Distribution of (37) *Cymopterus beckii*, (38) *C. higginsii*, (39) *C. minimus*, and (40) *Dalea flavescens* var. *epica*.



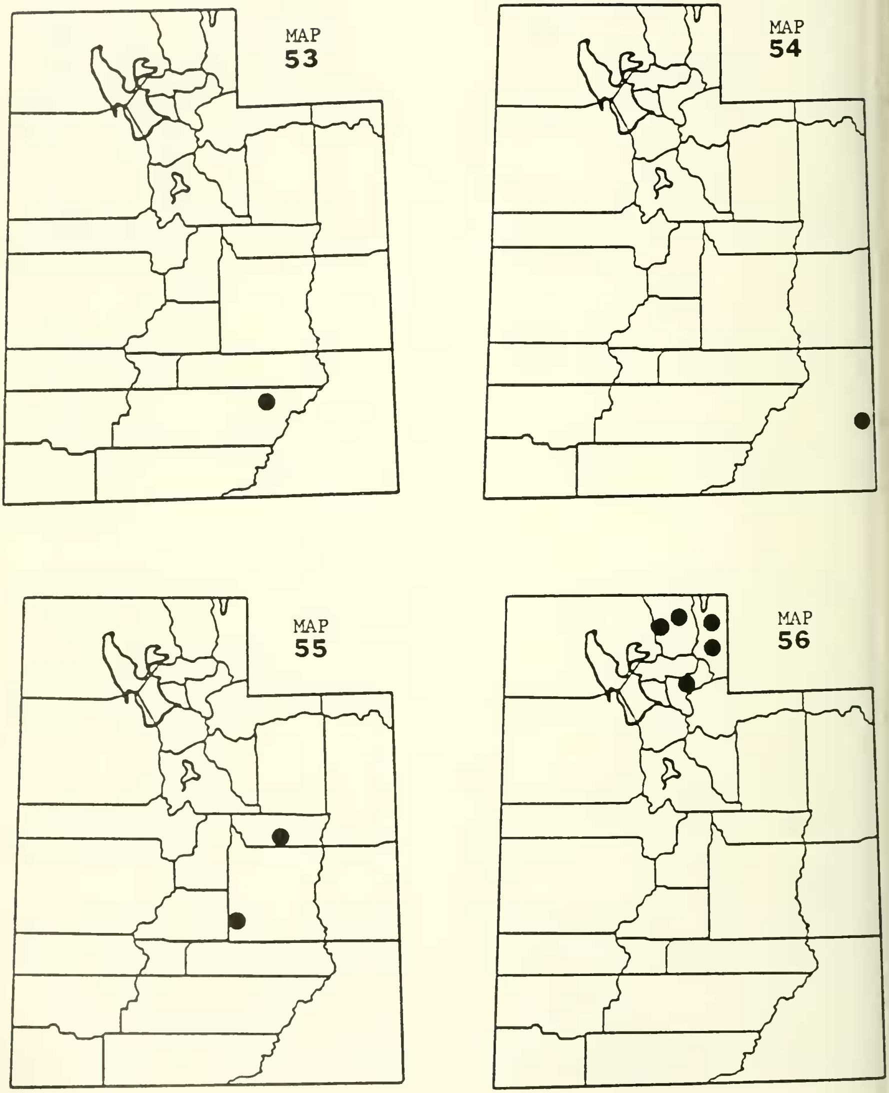
Maps 41–44. Distribution of (41) *Draba maguirei* var. *burkei*, (42) *Epilobium nevadense*, (43) *Erigeron cronquistii*, and (44) *E. kachinensis*.



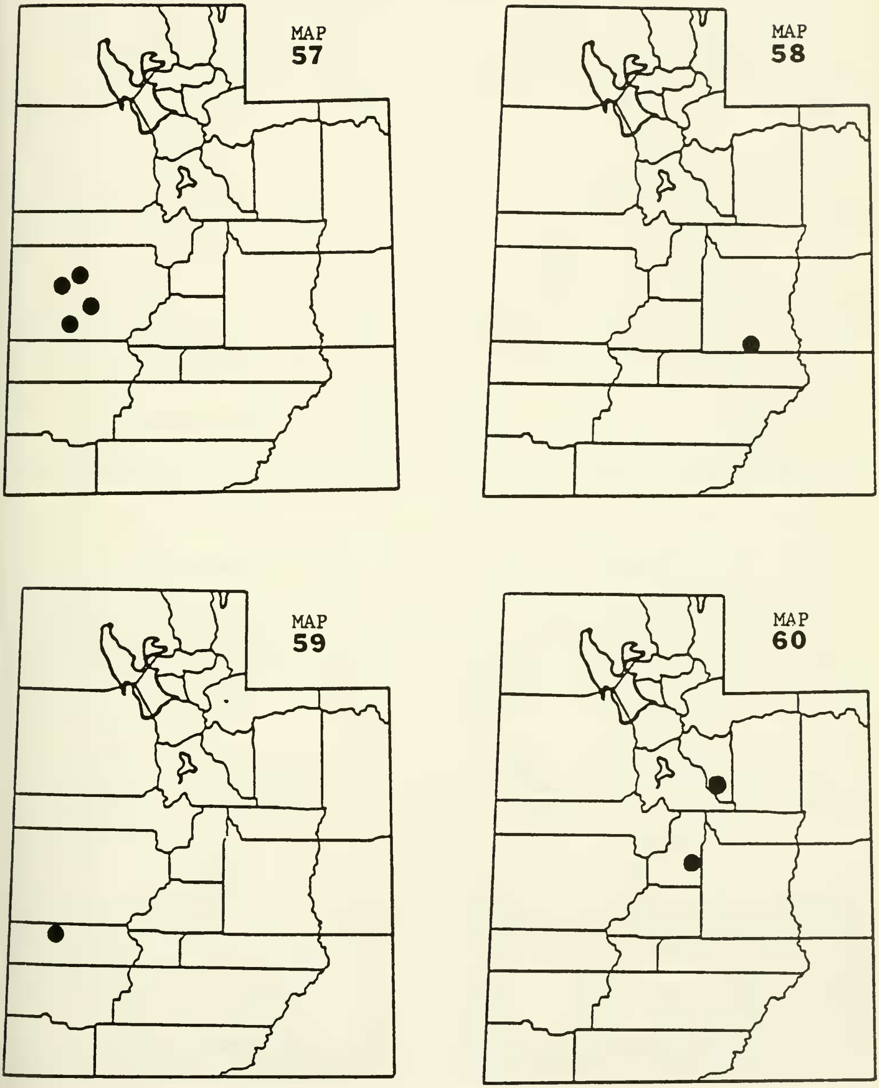
Maps 45–48. Distribution of (45) *Erigeron maguirei* var. *maguirei*, (46) *E. maguirei* var. *harrisonii*, (47) *E. mancus*, and (48) *E. proselyticus*.



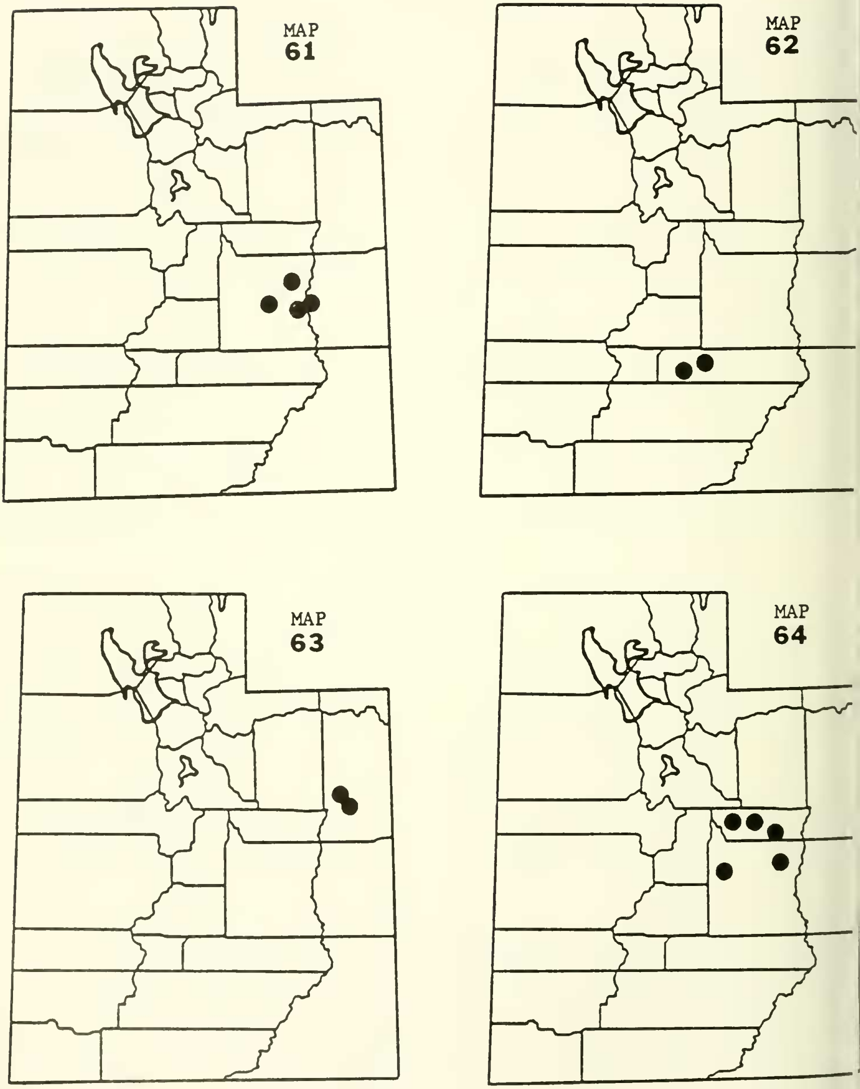
Maps 49–52. Distribution of (49) *Erigeron sionis,* (50) *E. untermannii,* (51) *Eriogonum ammophilum,* and (52) *E. aretioides.*



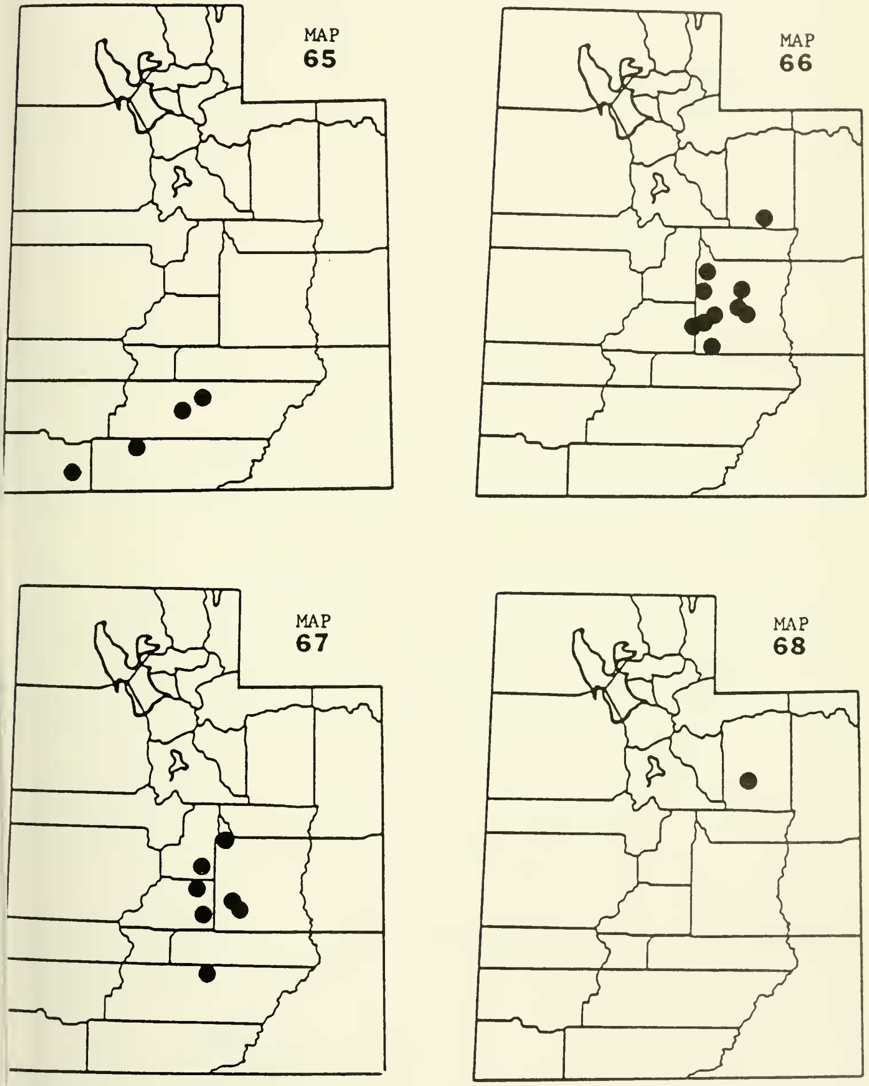
Maps 53–56. Distribution of (53) *Eriogonum cronquistii*, (54) *E. humivagans*, (55) *E. lancifolium*, and (56) *E. loganum*.



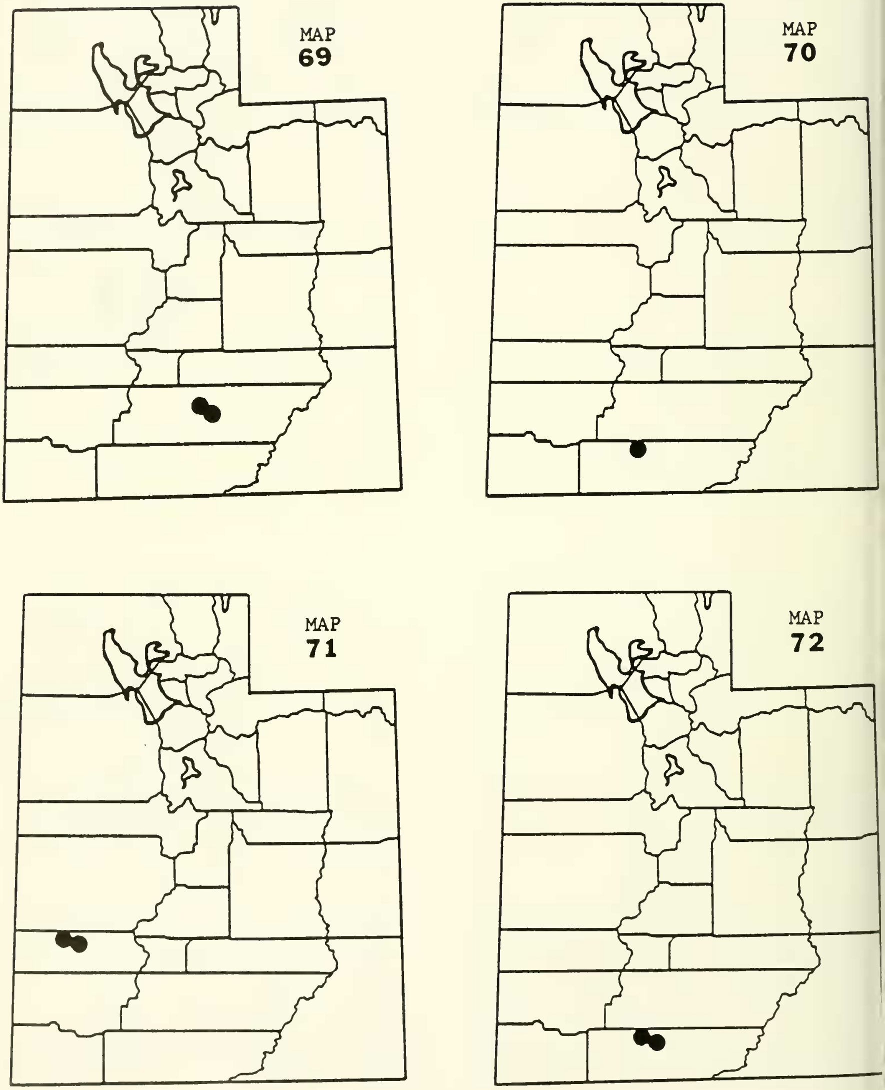
Maps 57–60. Distribution of (57) *Eriogonum natum*, (58) *E. smithii*, (59) *E. soredium*, and (60) *Festuca dasyclada*.



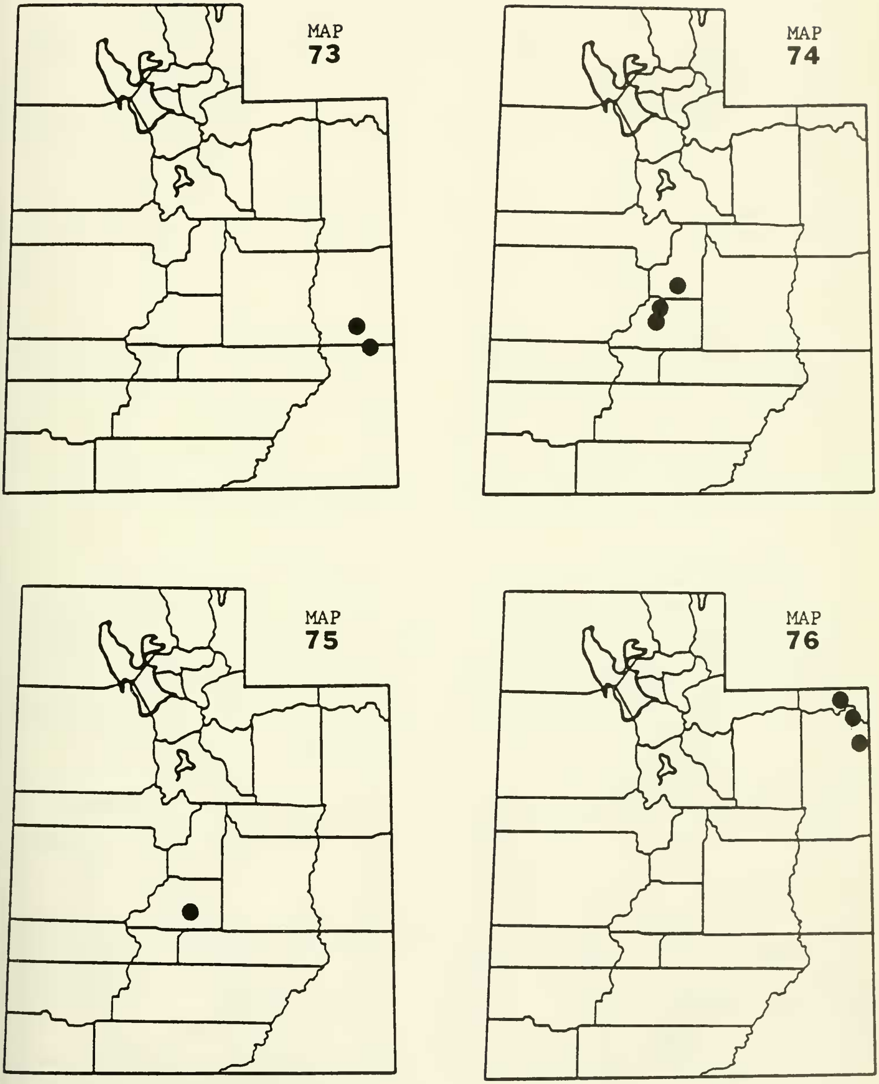
Maps 61–64. Distribution of (61) *Gaillardia flava*, (62) *Gilia caespitosa*, (63) *Glaucocarpon suffrutescens*, and (6
Hedysarum occidentale var. *canone*.



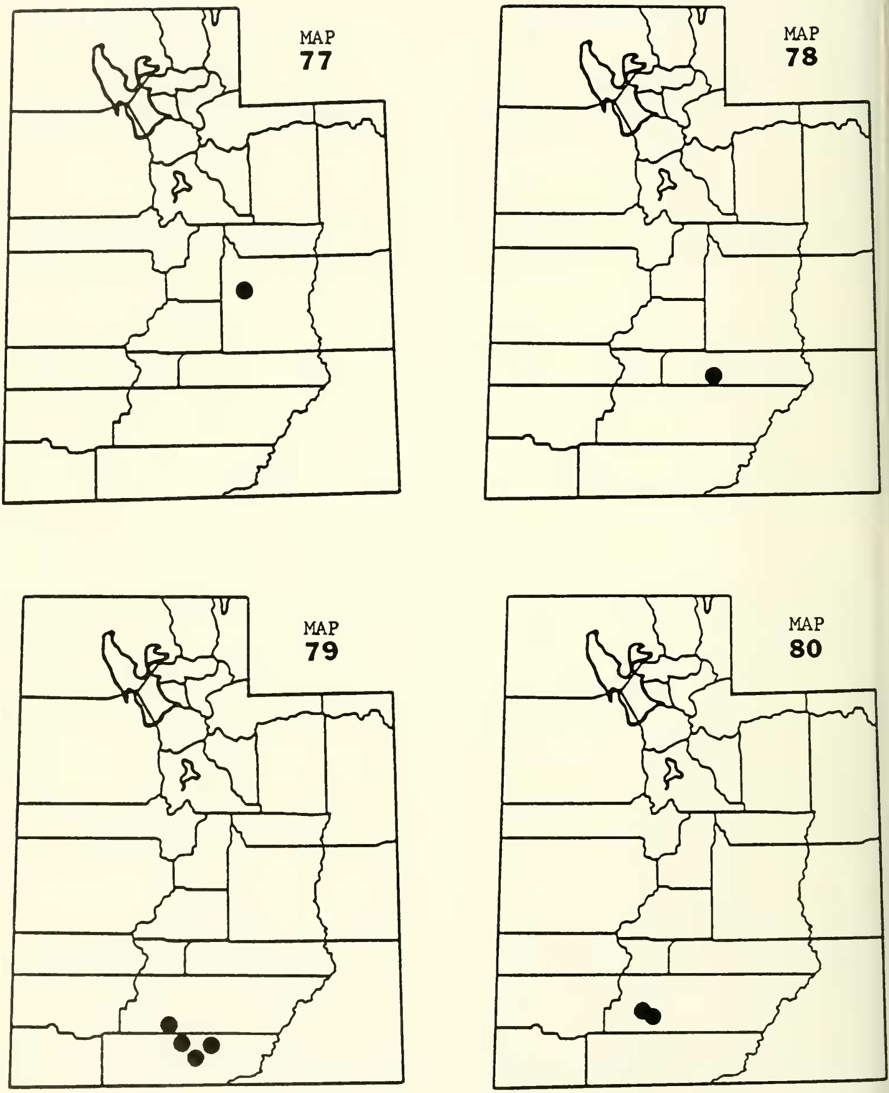
Maps 65–68. Distribution of (65) *Heterotheca jonesii*, (66) *Hymenoxys depressa*, (67) *H. helenioides*, and (68) *Lepidium barnebyanum*.



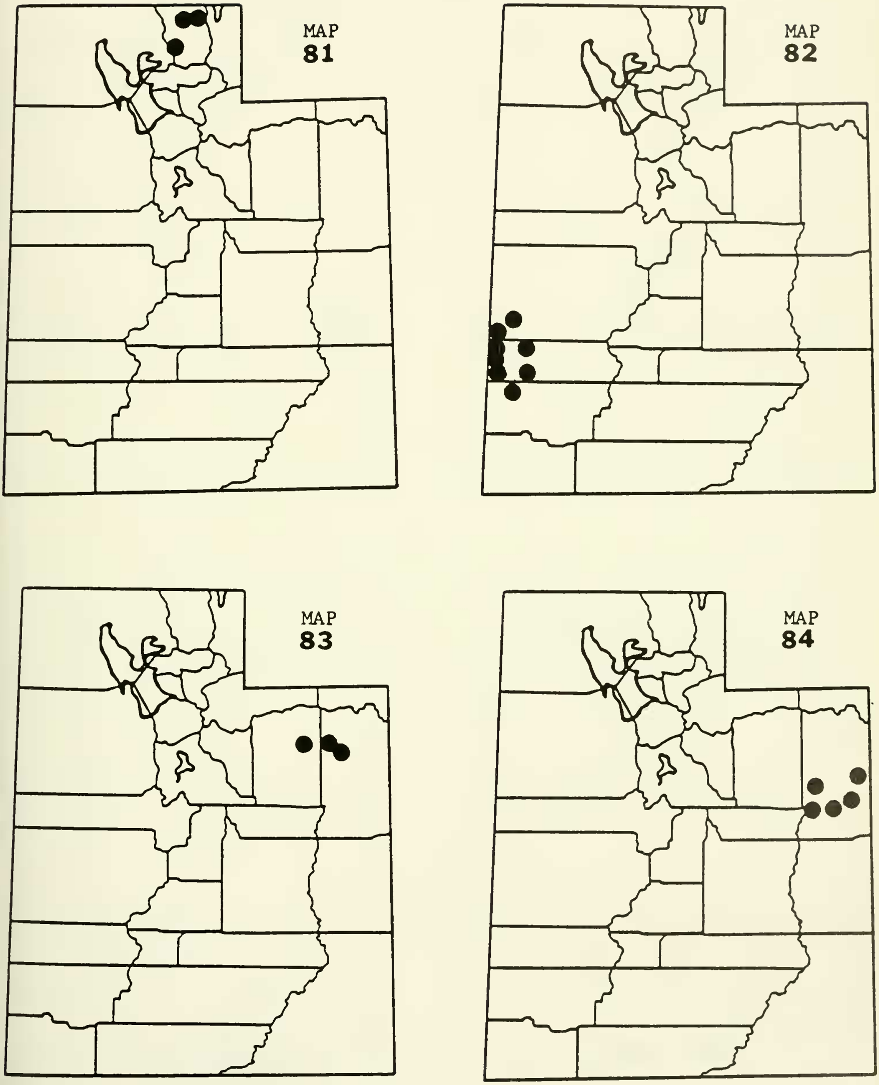
Maps 69–72. Distribution of (69) *Lepidium montanum* var. *neeseae*, (70) *L. montanum* var. *stellae*, (71) *L. ostleri*, and (72) *Lesquerella tumulosa*.



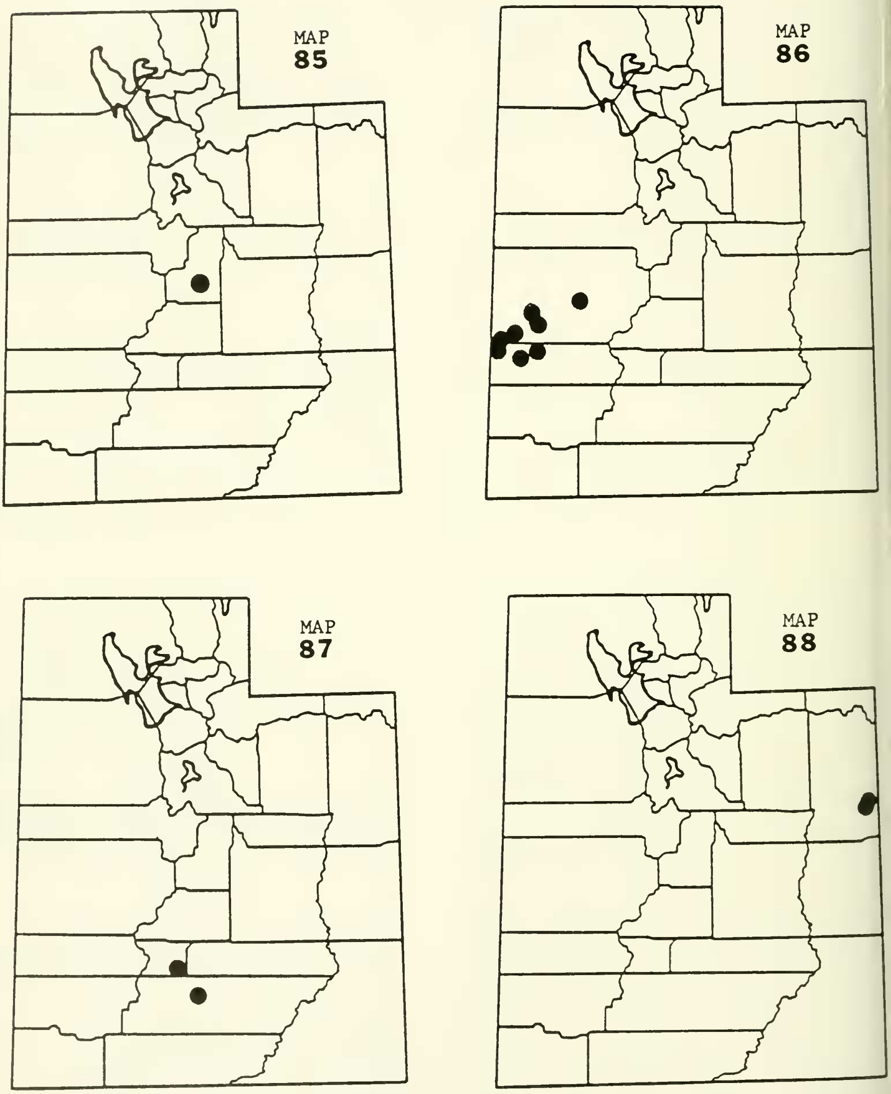
Maps 73–76. Distribution of (73) *Lomatium latilobum*, (74) *Mentzelia argillosa*, (75) *Najas caespitosus*, and (76) *Oenothera acutissima*.



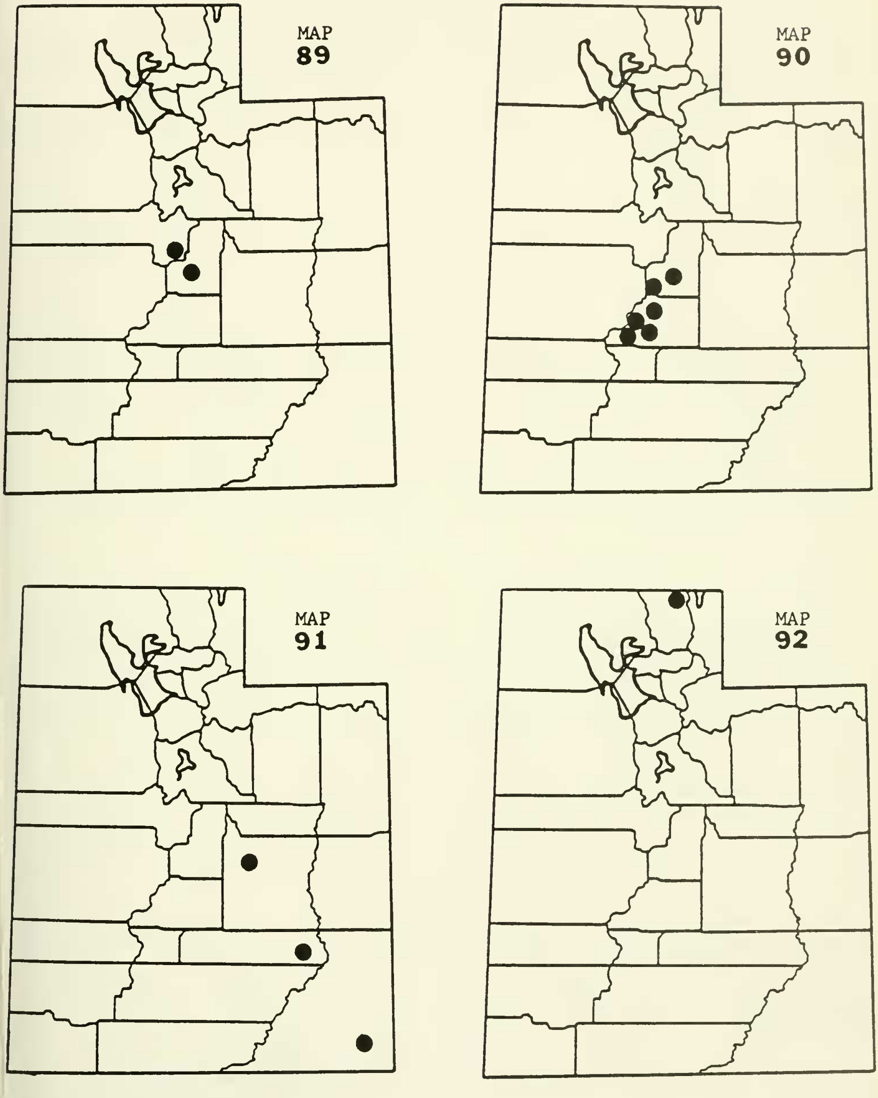
Maps 77–80. Distribution of (77) *Pediocactus despainii*, (78) *P. winkleri*, (79) *Penstemon atwoodii*, and (80) *P. bracteatus*.



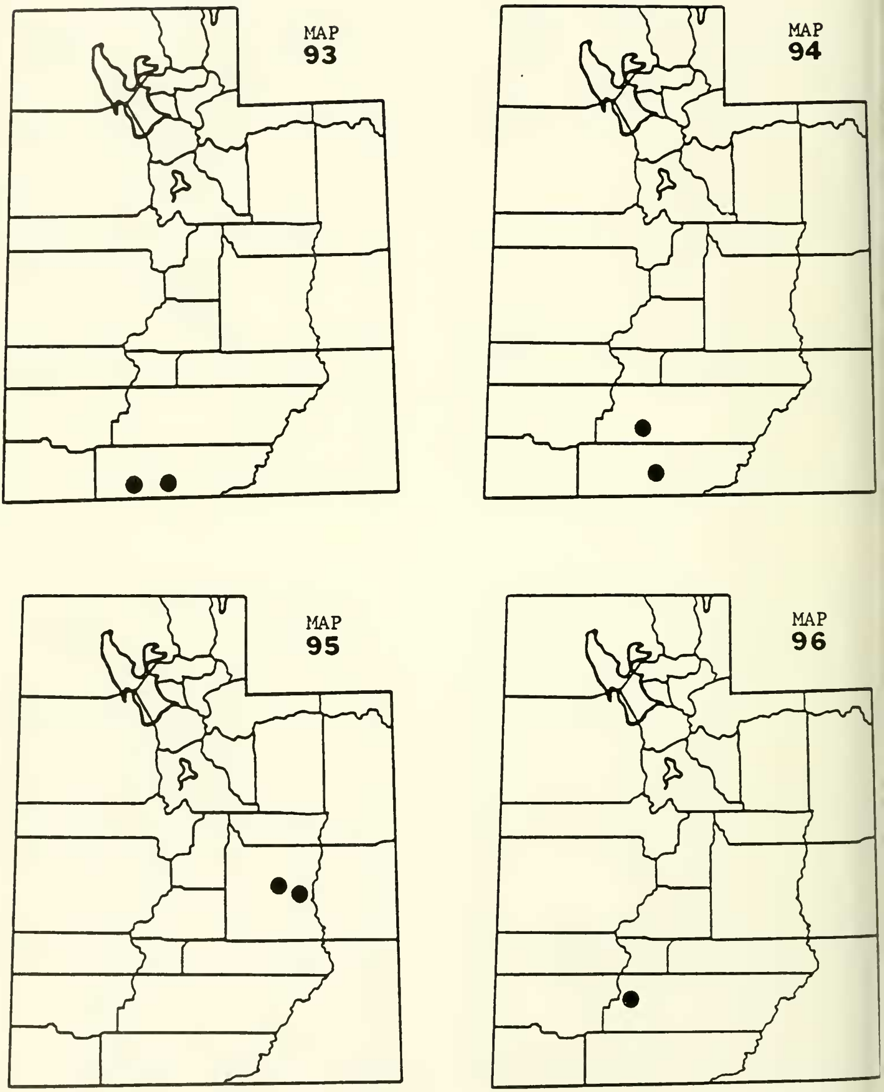
Maps 81–84. Distribution of (81) *Penstemon compactus*, (82) *P. concinnus*, (83) *P. goodrichii*, and (84) *P. grahamii*.



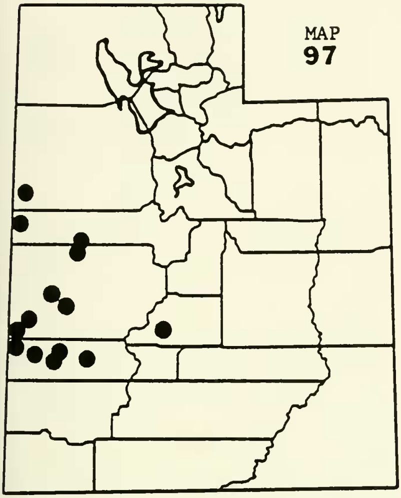
Maps 85–88. Distribution of (85) *Penstemon leptanthus*, (86) *P. nanus*, (87) *P. parvus*, and (88) *P. scariosus* var. *albifluvis*.

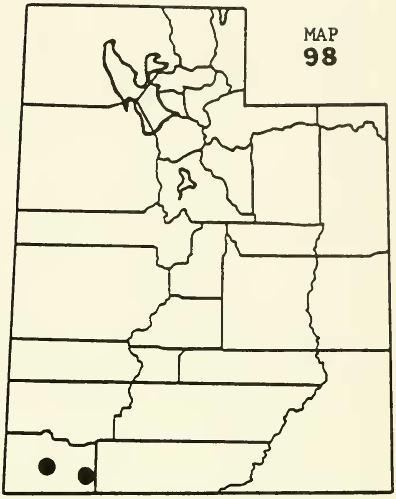


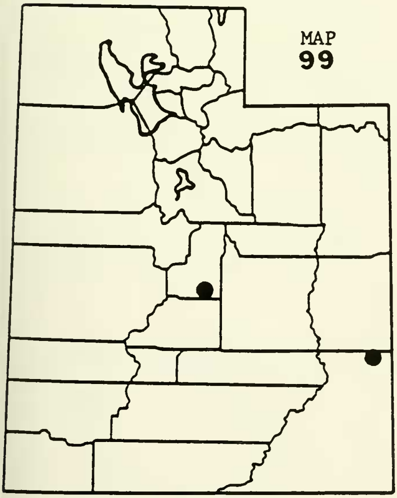
Maps 89–92. Distribution of (89) *Penstemon tidestromii*, (90) *P. wardii*, (91) *Phacelia indecora*, and (92) *Primula maguirei*.

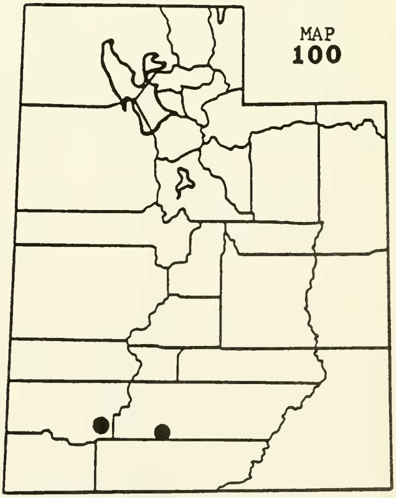


Maps 93–96. Distribution of (93) *Psoralea epipsila*, (94) *P. pariensis*, (95) *Psorothamnus polyadenius* var. *jonesii*, and (96) *Ranunculus acriformis* var. *aestivalis*.

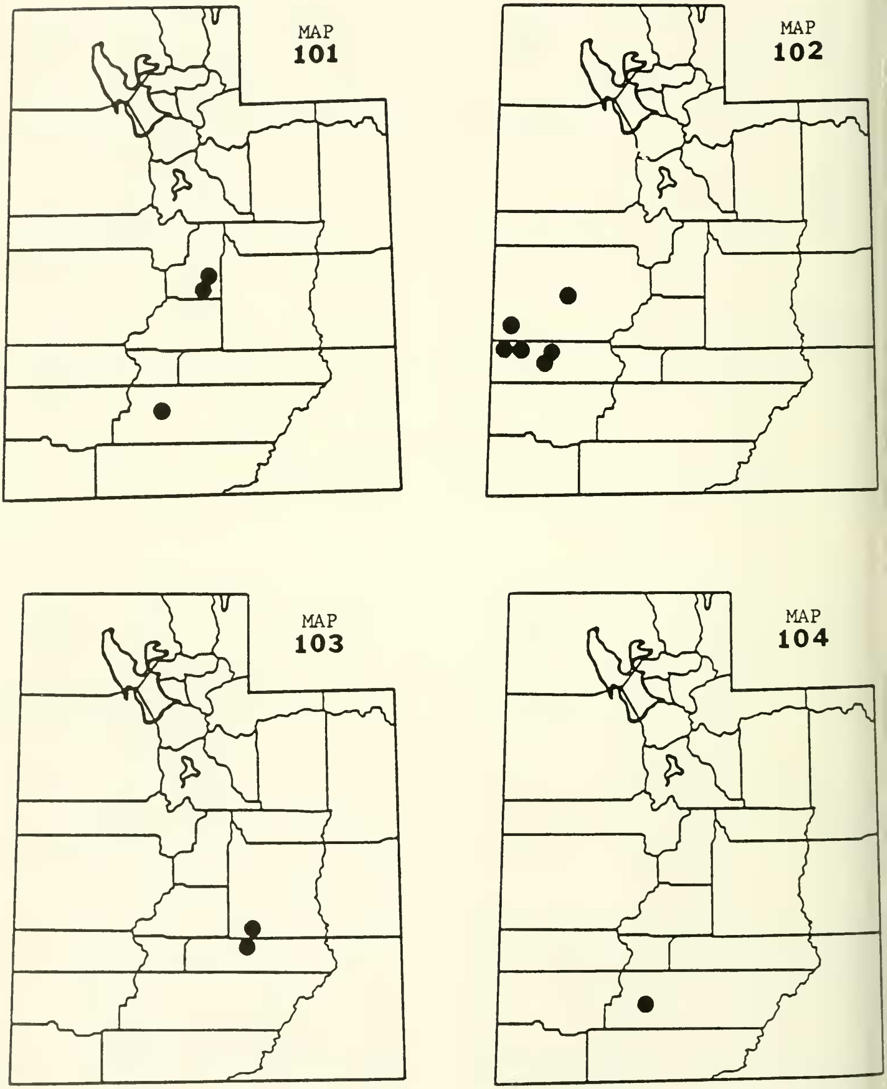




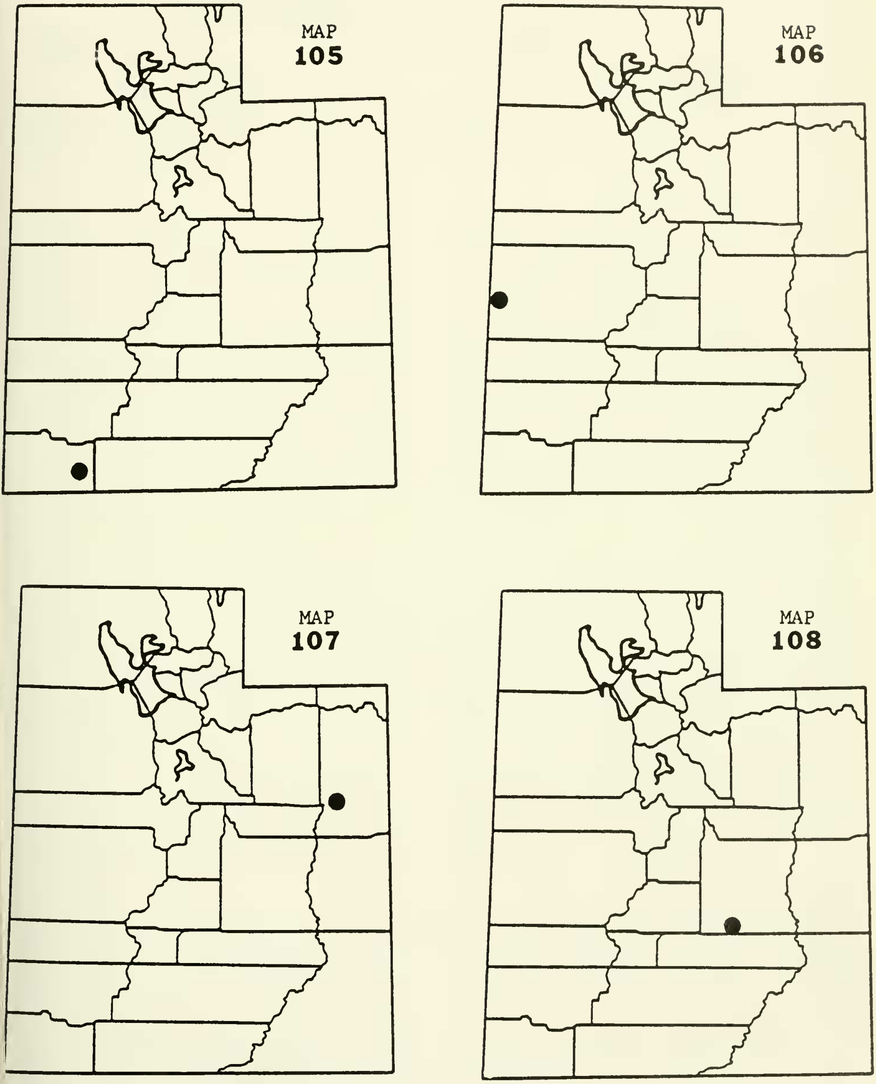




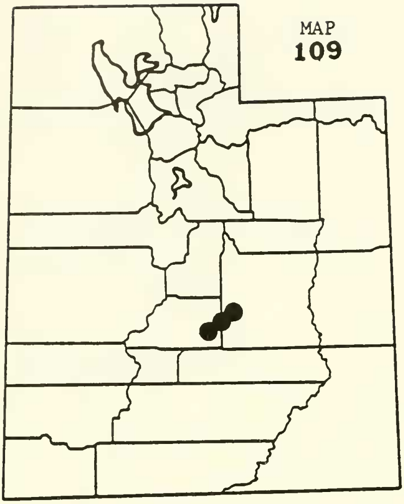
Maps 97–100. Distribution of (97) *Sclerocactus pubispinus*, (98) *Selaginella utahensis*, (99) *Senecio dimorphophyllus* var. *intermedius*, and (100) *Silene petersonii* var. *minor*.

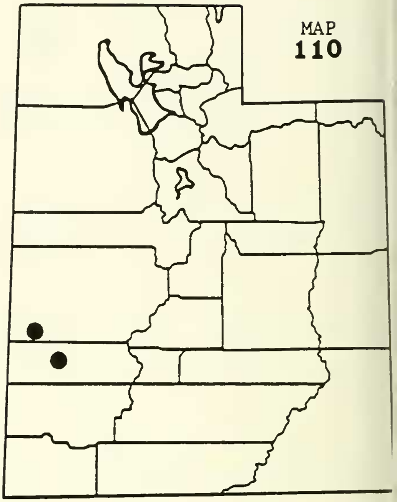


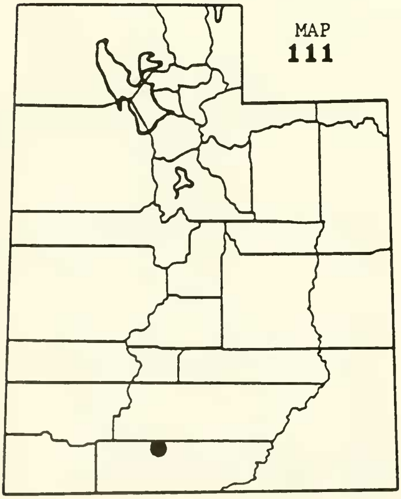
Maps 101–104. Distribution of (101) *Silene petersonii* var. *petersonii*, (102) *Sphaeralcea caespitosa*, (103) *S. psoraloides*, and (104) *Sphaeromeria capitata*.



Maps 105–108. Distribution of (105) *Sphaeromeria ruthiae*, (106) *Swertia gypsicola*, (107) *Thelypodiopsis argillacea*, and (108) *T. barnebyi*.







Maps 109–111. Distribution of (109) *Townsendia aprica*, (110) *Trifolium andersonii* var. *friscanum*, and (111) *Xylorhiza cronquistii*.